

AUG 28 1944

JOURNAL *of* FARM ECONOMICS

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Published by

THE AMERICAN FARM ECONOMIC ASSOCIATION

Volume XXVI

AUGUST, 1944

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Price: \$5 per year, this issue \$1.95

Entered as second class matter at the post office at Menasha, Wis. Acceptance for mailing at a special rate of postage provided for in the Act of February 23, 1925, paragraph 4, section 412, P. L. & R., authorized November 27, 1931.

JOURNAL OF FARM ECONOMICS

Vol. XXVI

August, 1944

No. 3

CHANGES IN INCOME DISTRIBUTION IN AGRICULTURE WITH SPECIAL REFERENCE TO TECHNOLOGICAL PROGRESS*

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AGRICULTURE is now passing through one of the most lucrative periods in history but the future will require several large-scale adjustments which are liable to bring forth new problems in the industry. However, it can be expected that some of the problems facing agriculture in the post-war period will be only a continuation of those which plagued it in years previous to the outbreak of war. This may be especially true for adjustments required as a result of technological change.

World War I was scarcely over when problems arose. Time did not relieve the situation but seemed only to make it more critical. Numerous factors were responsible for the plight of agriculture during the 20-year period 1921-40. The major factors in the early thirties, general economic depression and drouth, were obvious. Three other factors upon which much attention was focused were the excessive farm mortgage debt, an expanded acreage resulting from the plow-up of additional land and the loss of foreign markets. The first of these was undoubtedly one of the more important maladjustments resulting from World War I. It was not, of course, the sole explanation of agriculture's plight. There is an additional factor which, although less apparent, probably was as important as numerous others which in the past drew a greater amount of emphasis. This is technological change. War serves as a strong stimulant toward the adoption of changes in the technique of production and World War II promises to prove no exception as far as agriculture is concerned. Two factors encourage the shift in this direction.

* Journal Paper No. J-1225 of the Iowa Agricultural Experiment Station, Ames, Iowa. Project 795.

High income plus labor shortages stimulate acquisition of much additional machinery. Accordingly, the major change in structure of our agricultural plant will be in the amount of added capital. Then, too, the intensive educational activities of the Agricultural Extension Service undoubtedly will have been more effective in promoting shifts to approved practices than during World War I or for any like period in between the two conflicts. More farmers are being reached through educational channels and also the patriotic appeal is more effective in breaking down resistance to change than are peace-time educational methods. These trends are revealed in a recent survey which indicates that about 1 out of 6 farmers in Iowa plan to purchase new cornpickers as soon as supplies are available. The bulk of these machines represent additions and not replacements. Figures for other machines are correspondingly high. Too, it is reported that the number of farmers buying protein feed to supplement carbohydrate feeds has increased by about one-third.

Some attention already has been given the economic consequence of technological change in agriculture but it appears that the surface has as yet only been scratched. This paper represents an attempt to scratch a bit further.

Two major questions arise as a result of technological change in agriculture: (1) How are the absolute and relative shares of the national income going to agriculture affected by changing techniques in the industry? (2) How does technological change affect the relative importance of the factors land, labor, capital and management and the share of agricultural income imputed to each? This study deals only with the second of these two questions.

Technological change often has the effect of changing the relative importance of agents used in the production of a given commodity. Accordingly, either or both the absolute and relative shares of the product imputed to the factors used may be altered. This is as true in agriculture as elsewhere and may give rise to numerous income and organizational problems in the industry; it is a problem which thus far has received little attention by agricultural economists.

Some General Principles

Since technological change is merely one of several dynamic factors, the discussion must center largely around theoretical consid-

erations. Any statistical expression of the effects of changing technology in agriculture is open to error but an attempt is made here to suggest some possible tendencies.

Before examining the specific case of agriculture, a review of general principles is in order. Hicks¹ has provided some analytical tools which are useful in this respect. A technological change can affect the income imputed to a given factor of production in various ways: (1) Both the absolute and relative shares of the product imputed to a given factor may be decreased. (2) Both absolute and relative shares may be increased. (3) The absolute share may increase while the relative share is decreased. The final outcome depends on how the marginal productivity of the given factor is affected. The discussion of general principles may be simplified by assuming that only two factors, labor and capital for example, are used in producing a given commodity. Accordingly, improved techniques which affect both absolute and relative shares of the total product imputed to the two factors may be classified as labor saving, capital saving or neutral. Labor saving devices are those which increase the marginal product of capital by more than they increase the marginal product of labor. Conversely, capital saving inventions increase the marginal product of capital by less than that of labor. A neutral invention means that the marginal productivities of the two factors are increased in the same ratio.

A labor saving invention can mean (1) that the marginal product of both factors is increased but that the marginal product of capital is increased by more than the marginal product of labor, or (2) that the marginal productivity of capital is increased while that of labor is decreased. In both cases the relative share imputed to the labor factor is changed in the same direction but the absolute share moves in opposite directions. In the first case the absolute share of the total product going to both capital and labor will increase but, whereas the relative share imputed to capital will be greater than before the adoption of the improved technique, the relative share going to labor will be less. If the improvement falls in the second category absolute and relative shares imputed to capital still increase but both the absolute and relative shares going to labor decrease.

¹ Hicks, J. R., *Distribution and Economic Progress*, Review of Economic Studies, 4: 1-12, 1936.

If the improvement is of a capital saving nature the above analysis still holds except that the positions of labor and capital are reversed. If the improvement is neutral the relative shares imputed to the two factors will remain the same and it can be expected that the absolute share of both will be increased. Otherwise there would be no incentive for adopting the new techniques.

The same principles apply when more than two factors are concerned. However, there are many more possibilities as to the outcome.

For the purpose of considering the effects of technological improvements on the shares and importance of the various factors in agriculture we might well follow the customary demarcation of land, labor, capital and management. This classification is useful since numerous problems in the industry follow along these very lines and because this classification lends itself to an attempt at empirical verification.

Obviously the results of the many technological changes in agriculture over the past 30 years are intermingled. One improvement may have the effect of increasing the returns imputed to one factor while an unrelated improvement may act in the opposite direction to this same factor. But what is the total effect of all changes? Has one improvement tended to cancel others, thus leaving the relative importance of all factors the same, or has the type of improvement which increases the importance of one productive agent at the expense of others predominated? Table 1 is the result of an attempt to throw some light on this question. It shows estimates of the relative shares of the gross agricultural income attributable to the three groups of factors, land, labor and capital and management for three different periods. A comparison of absolute shares is meaningless since the impact of numerous other economic forces, especially that of the general price level, cannot be isolated from the effects of technological change. A comparison of relative shares is not so much affected by general price level movements which change agricultural and industrial prices by the same relative amount. It is, however, somewhat vulnerable to non-technological forces which change agricultural/industrial price relationships. Forces falling in the latter category are those such as a decline in exports, an increase in population, or a change in tastes.

The effect of these outside forces on agricultural prices alone should mainly be reflected in the absolute and relative shares going to factors which have no alternatives other than farming. Factors

which are freely mobile and enjoy close alternatives in other industries would gain or lose only temporarily from price changes affecting agriculture alone. Were the supply of factors in an industry absolutely fixed, commodity price changes would not alter the absolute and relative shares of physical product nor the relative shares of money income imputed to any one factor. Accordingly, to the extent that land is the fixed factor in agriculture the effect of forces outside the field of technological change on agricultural price should be reflected in the absolute share of agricultural income imputed to land. Under competitive conditions and in the long run other factors could claim no more and would be satisfied with no less than

TABLE 1. GAINS OR LOSS IN MARKET OUTLET AS A RESULT OF TWO Nontechnological Forces Between 1920-24 and 1935-40*

Commodity	Loss from decline in foreign markets ¹	Gain possible from population growth ²
Wheat	172 million bu.	83 million bu.
Cotton	623 thousand bales	1,101 thousand bales
Pork products	1,364 million lbs.	1,595 million lbs.
Beef products	225 million lbs.	1,322 million lbs.

* Estimates based on data from Agricultural Statistics.

¹ Based on net exports.

² On a basis of per capita consumption in the period 1920-24.

could be earned in other industries. But there is not complete freedom of entry or exodus for labor and capital in agriculture on a basis of comparative returns in other industries. This is especially true for short periods of time and too much so over longer periods. Accordingly, the immediate effect of price changes for reasons other than technological improvements is to leave relative shares of income in agriculture much the same as if all factors were fixed. Only to the extent that labor and capital are mobile in the long run do "outside" price changes effect the relative share of gross income paid to each factor. Regardless of these possibilities it seems only logical that technological improvement has been one of the more influential forces in altering the share of income attributed to land, labor, capital and management. Too, one outside force also tends to cancel the effect of another (for example, a growing population and a declining foreign market, as shown by table 1). Finally, if we are interested in the consequences of changing relative shares for factors in agriculture it makes no difference how much of the change is due to technological or outside forces.

Some Estimates

The method of arriving at the estimates in table 2 is much the same as that customarily used in analyzing farm business records. The method used is outlined in the next paragraph. Relative shares of net income show almost exactly the same pattern as those for gross income but are not presented here due to the greater complications in estimation.

Computation of relative shares first requires an estimate of absolute shares for each year under consideration. In the case of land this estimate is based on gross rents paid landlords and the proportion of the value of all land and improvements operated under rental arrangements. This assumes that if rental rates have been

TABLE 2. ESTIMATED RELATIVE SHARE OF GROSS INCOME IN AGRICULTURE
IMPUTED TO LAND, LABOR AND CAPITAL AND MANAGEMENT*

Period	Labor	Land	Capital and Management	Total
1910-14	53.3	30.3	16.4	100.0
1924-28	47.4	30.2	22.4	100.0
1936-40	41.8	26.9	31.3	100.0

* Estimates based on data from Agricultural Statistics and United States Census.

determined competitively the owner-operator has the alternative of renting his land at the same rate per dollar value and that rents paid represent the marginal product of the land. The absolute share going to labor was computed in a somewhat similar manner. The total wages of labor are made up of two parts, the wages paid to hired labor and the estimated value of family and operator labor. Here it was assumed that the work performed by the family and by the operator as a laborer was equivalent in value to that of a hired laborer. Hence the estimated employment of family and operator labor used in each month was multiplied by the average monthly wage rate without board. There exists no satisfactory method of separating the approximate share imputed to capital from that for management. Accordingly, the two have been lumped together and were arrived at by subtracting from the total annual gross income the estimated absolute share of land and labor.

If reliable short term interest rates were available capital might be handled in the same way as labor and land. This would especially express the effect of an increased amount of capital on the share of

income going to this factor. However, as will be brought out in a later section, the change in form of capital has probably been more important than the change in amount as far as income in the industry is concerned.

One encounters certain insurmountable difficulties in arriving at these estimates. Some family labor would not be used if it had to be paid a wage. In other cases like that of the operator the supply of labor may be discontinuous in that the price necessary to call forth eight months' work results in the availability of another four months at no additional costs. Rents paid to landlords are slow in adjusting to new conditions and include not only a payment for the use of the land but is also a partial payment for the use of some capital, especially in the form of improvements.² These and other obstacles are important if it is desired to determine the exact absolute shares going to a productive agent in a given year. Yet they are not so serious if we are interested in the relative changes over a period of years since the errors will be of the same kind and in the same direction for each year. Consequently, the figures in table 2 should give some indication as to what has happened to the relative shares of farm income imputed to land, labor and to capital and management over the past 25 years.

The three periods 1910-14, 1924-28 and 1936-40 are used for comparison since both prices and farm income were quite stable within each of these periods. A sudden swing in price levels and income does not allow time for adjustment in rentals and wage rates and therefore would result in fairly large deviations away from the general trend. For example, during 1930 and 1931, the percentage of gross income figured as wages to labor was greater than for any other years considered. Yet even this bears some significance since it emphasizes the fact that the farm families were mainly selling their labor and were using agricultural commodities as the outlet during these years.

Changing Relative Importance of Factors

The trends for labor and capital and management are apparent. The figures emphasize the decreasing importance of the labor factor in agricultural production. Not only is the number of persons em-

² This is not especially serious for the analysis since it is not the type of capital represented by improvements which has undergone the more important technological changes in the past 25 years.

ployed in agriculture declining but also the relative share of the product which can be considered as imputed to labor is in a state of declension. This is understandable when we think of labor saving devices both in the terms of Hicks and in the terms of direct substitution of machinery for labor as encouraged by the more favorable marginal productivity/marginal cost ratio of capital resulting from (a) lower interest rates and (b) new inventions. Too, the figures in table 2 probably understate the declining importance of labor in agriculture due to the discontinuous nature of the labor supply as mentioned in a previous section of this paper. Some family labor has always fallen into this category but the backlog of labor in agriculture was certainly as great or greater in the decade preceding World War II than in any other similar period. This is emphasized when we consider the sizeable increase in production which has been forthcoming since the outbreak of the war and at a time when farm labor supplies have decreased and the supply of additional high capacity labor saving equipment has been severely limited.

Whereas the importance of labor as an input in agriculture has been decreasing the marginal contribution of capital has been increasing. Table 2 does not separate the share of income imputed to labor from that of management. Yet this may present no special difficulties. It may and probably does mean that changing technology has placed a premium on both capital and management. A greater importance of management as a result of technological change is consistent with the theory of the firm as set out by N. Kaldor.³ The main function of management is to draw up expectation of and formulate plans to meet changing conditions. Were there no changes the duties of management, in the terms of Kaldor, would be nil once the best plan had been adopted. Technological change as a dynamic factor in agriculture increases the importance of management in various ways. The producer must display greater managerial alertness if he is to realize a share of the profits of innovation which occur soon after the development of the improved methods and before general adoption has forced returns down to the normal level. Changing technology may increase economic uncertainties since (a) new machinery often makes obsolete capital already in use or may conceivably increase or decrease the equity in the land, and

³ Kaldor, Nicholas, *The Equilibrium of the Firm*, *The Economic Journal*, 44: 60-67, 1934.

(b) greater cash operating expense makes the year's returns more vulnerable to certain natural hazards or a decline in the general price level.⁴ Too, adoption of some new developments such as the tractor and power-driven equipment tend to require a reorganization of the entire farm. Mainly, uncertainty is increased when technological change is erratic and cannot be predicted.

Increase in the relative share of agricultural income imputed to capital may be of two different sorts. The first type comes about through the labor saving invention as suggested by Hicks. More specifically, the new invention may result in a larger share imputed to capital because of (1) the greater productivity of a given amount of capital (2) a substitution of capital for labor as a result of the changed marginal product/marginal cost ratios and (3) the use of a greater amount of capital as a result of its increased productivity even if all labor were retained in the industry. The second factor tending towards an increased relative share of income for capital has been the greater quantity of capital employed in agriculture as a result of non-technological forces. A greater use of capital has come about as (1) farm operators reinvested part of their earnings in the farm business, and (2) the downward trend in interest rates has made the use of additional capital profitable. Of these several explanations as to why the relative share of income imputed to capital might increase, the first (labor saving improvements in terms of Hicks) appears to be the most important. True, the amount of capital used in agriculture has increased as is shown in table 3, but the increased investment in machinery has not been proportional to the cost of the new machines which have been developed.

Aside from the matter of capital rationing in agriculture, the reason for the seemingly slow increase in quantity of capital can best be exposed if we consider another classification of improvements other than that of Hicks. Accordingly, we can classify technological changes in regard to their effect on the amount of the various factors required. Thus, some improvements save labor but require more capital. The cornpicker is an example of this type. Some increase the productiveness of the land either with or without increased inputs of labor and capital. Hybrid corn, for example, in-

⁴ Some technological changes reduce the physical uncertainties due to natural hazards. This is especially true of such improvements as disease resistance breeds and varieties and vaccination for disease. Even the tractor is somewhat of a hedge against a wet and backward season.

creased yields but likewise increased to some extent the amount of labor and capital necessary per acre. Still another type of improvement and important for the discussion under way is the one which saves labor and, while requiring capital in a different form, does not require much additional investment in the farm plant. The tractor is an example since on many farms the investment in a tractor is very little different from that which would be required for work stock if horse power were used. In this case the important factor affecting the share of income imputed to capital is more nearly the increased net productivity arising from the change in the nature of the capital rather than a greater quantity of capital. This reasoning is compatible with Hick's definition of a labor saving invention.

TABLE 3. CAPITAL IN AGRICULTURE, 1910, 1920, 1930 and 1940

Year	Total capital in agriculture ¹	Capital per worker in agriculture	Tractors, on farms Jan. 1	Work Animals on farms Jan. 1
	(Million dollars)	(Dollars)	(Thousands)	(Thousands)
1910	7,004	577	1	24,211
1920	7,849	691	246	25,742
1930	7,860	703	920	19,124
1940	7,596	718	1545	14,481

Source: *Agricultural Statistics*.

¹ Includes work stock, other livestock and poultry, motor vehicles used for production and other machinery and equipment reduced to a 1910-14 basis.

However, an increase in capital apart from technological change can also mean a greater relative share to the factor. According to general principles the increase in quantity of a factor in a closed economy will always increase the absolute share of income imputed to the factor if the elasticity of demand is greater than unity. Whether or not the relative share will then increase, depends on the nature of the supply of other factors. Only if the supply of other factors is of a decreasing cost nature would the increase in quantity of one factor increase its relative share. If the elasticity of supply of other factors were infinite relative shares would remain the same.

Since agriculture is not a closed economy an increase in capital can result in both larger absolute and relative shares for capital in a somewhat different manner. Even under a given state of technology an additional quantity of capital may be substituted for labor. The

smaller amount of labor used will, even if employed at former wage levels, mean a lower absolute and relative share for labor and a greater absolute and relative share for capital.

The figures for land are not so conclusive since (1) the smaller differences for the periods shown have greater probability of arising from errors of sampling or estimation and (2) the major effects of outside forces should theoretically be capitalized into land. Signs do point, however, to a declining importance of land as an input. This is especially so when we consider only technological changes which affect the physical productivity of land. Yet there may even be other forces within the field of technological change which offset this tendency.

The effect of improvements in agriculture on land's relative share of the income can best be visualized after examining major types of changes. The technological advancements which have the most direct effect on rents are those which increase the total output per acre of land. Higher yielding strains, improved production practices and control of insects and pests as applied to either crops or livestock fall in this category. Improvements of this type may conceivably either increase or decrease absolute rents depending upon whether the demand for the product is elastic or inelastic. An increased output of a commodity for which the demand is inelastic should result in lower absolute money rents unless the land has a very close alternative use. Even then the money rents will be less if the demand for the alternative is inelastic. In case the demand is elastic this type of improvement should normally result in greater absolute rents but may or may not result in larger relative shares imputed to land. Although the relative share would likely increase the final outcome depends on whether or not the marginal product of land is increased by more than that of other agents used in conjunction with it.

Plainly, the effects of improvements which increase the physical productivity of the land rest largely upon the elasticity of demand and will differ with commodities. The fact that past attempts to measure demand elasticities point to a predominance of inelastic demands in agriculture suggests that the total effect of greater production per acre is to lower absolute money rents and consequently land's relative share of income.

Apart from improvements which increase the physical productivity of land are those which mainly result in a substitution of

capital for labor but which may also affect rents. Part of any increased net returns from this type of substitution probably tends to be capitalized into the land. An exception to this statement may hold true in the shift away from work animals to power-driven machines. A quantity of grain formerly required as feed for horses and mules is now freed for other uses. Here again absolute rents may rise or fall depending upon whether the elasticity of demand is greater or less than unity. Too, the short and long run outcomes will certainly differ. The profits of innovation forthcoming to a few operators before general adoption of a method which substitutes machines for labor will not be capitalized into the land. Widespread adoption will certainly result in passing along part of any increased net income to land even for those changes in techniques which do not increase the physical productivity of the soil.

Although specific innovations may push the absolute or relative shares of land in either direction, the total effect of technological changes appears to have been in the downward direction. This would seem logical even if it were concluded that the figures for the three periods shown in table 2 vary only within sampling limits. The increase in population in the United States between 1910 and 1940 was about 39 million and between 1920 and 1940 about 26 million persons. Theoretically this growth in population should increase both absolute and relative shares of income imputed to land. The fact that the relative shares of land has at least not increased means that the sum total effect of other forces, of which technological change is certainly one of major significance, has been to decrease land's relative importance by an amount great enough to offset the effect of an increasing population. Too, even the classical explanation of rents would indicate a decline in the share of income imputed to land as a result of technological change. An increased physical productivity should have the effect of making land relatively less scarce.

Conclusions and Interpretations

Technological change is one of several dynamic factors affecting farm income and the share of income imputed to the major factors in agriculture. The effects of one new technique may either augment or counteract that of other improvements. Statistical measurement of results is thus difficult and subject to error. However, theoretical consideration plus empirical verification which is possible points in

the direction of a declining importance of land and labor as a consequence of technological change. On the other hand the total effect of these changes has been to place a premium on capital and management as inputs in agriculture.

The shift in importance of land, labor and capital and management as suggested in this paper has several far reaching implications. This is true from the standpoint of the individual farm operator as well as in agricultural planning. First, and contrary to a suggestion voiced at the present as well as after other wars, it emphasizes that agriculture should not now be counted upon as a dumping ground for returning army veterans. Prospects are that the present high level of farm income will result in more machinery and a continued decline in the relative importance of labor in agriculture.

Agriculture's plight in the past decade has partly been that of the wrong combination of land, labor and capital and management. Accordingly, post-war planning for a prosperous agriculture can take two somewhat different roads depending on the end: If the end is one of a high income per farm family and at the same time one of using resources in the most economic manner, the problem is partly that of getting people out of agriculture. If the end is one of a high income while maintaining a number of farm families near that of 1940, the emphasis must focus more nearly on supported prices.

This shift in relative importance of factors in agriculture has another significance. Low returns are increasingly the result for those farm families who are unable to acquire proper amounts of capital and who must accordingly sell commodities which embody mainly labor. Acquisition of suitable quantities and forms of capital which in turn may be combined in proper proportion with land may be more important than in investing limited funds in the title to land. Consequently, elimination of institutional resistances which restrict the inflow of capital into agriculture stands to increase low returns materially.

A PHILOSOPHY OF AGRICULTURAL ADJUSTMENT WITH PARTICULAR REFERENCE TO THE SOUTHEAST

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THE POLICIES being established now by social scientists, planners, and administrators will greatly influence our future agriculture. Since every individual or group planning for the post-war will be influenced by different experiences and points of view, it is suggested that results will be most useful if all participants in regional planning can agree upon a framework of general assumptions which will serve as points of orientation and make it possible to coordinate, in a specific fashion, the suggested lines of action agreed upon in the various groups and agencies.

Before going ahead with the problem of setting forth the assumptions or goals which may be used as a base for coordinating agricultural plans, we should mention certain processes and conditions essential to the entire concept of planning and to the working out of economic adjustment. Slowly, social scientists are discovering the form of society and giving us clearer descriptions of the uniformities which pervade its structure. Knowledge of the forces in the structure of society and systematic data concerning the actions of individuals under various social conditions have given economists clues as to methods for bringing about desired economic practices. In agriculture, the study and use of planned adjustment—both to meet changing physical and economic conditions and to create new combinations of economic force—have developed largely as an exercise of the tools furnished by the social scientists in the study of how societies operate. It is vital that economists realize the sociological elements involved in the currently popular approach to economic problems, i.e., the planned adjustment approach. Especially should economists be aware of the following beliefs or conditions essential to successful democratic operation of adjustment planning:

1. That economic goals or objectives can be agreed upon and fixed in the minds of enough people to inspire work and sacrifice toward their achievement.¹

* Alberta N. Coleman and Dudley E. Young assisted in the writing of this paper.

¹ It is interesting in this regard to find that the National Resources Planning

2. That economic force can be utilized in such a way as to achieve desirable goals through the use of various social, economic, and administrative tools sanctioned by an interested group and employed by social scientists, technical workers, and administrators.²
3. That social progress consists largely of adjustment to changing social objectives; and that developing techniques for deciding upon social goals, and later devising methods for accomplishing desired effects by introducing pressure at various points in the structure of the specific society, is one of the social scientist's chief tasks.

This is the general setting in which technical workers and administrators interested in agricultural adjustment are working. It is not the purpose of this paper to debate the merits of "progress by adjustment" philosophy, but rather (1) to suggest the bases of the "progress by adjustment" line of approach to economic affairs; (2) to appraise briefly the intensity of the need for adjustments in southern agriculture; (3) to suggest the major problem-fields; (4) to summarize the basic objectives toward which adjustments should be directed; (5) to point out the obstacles likely to be encountered in bringing about these objectives; and (6) to suggest a place of private and public action in achieving social aims. These several aims can, of course, be developed only in a very general fashion within the limits of this paper.

Need for Adjustment

War dislocations of population, capital, and accustomed methods and habits—coupled with a recent history of severe economic hardships due to chronic maladjustment in population distribution with relation to physical resources—have made even the casual student of the Southeast aware of the urgent need for a more productive agriculture and a more closely integrated economy. There would be no point in reviewing here the economic handicaps under

Board concludes, "The significant and beneficial shifts in farming stem in part from the participation of thousands of the region's farmers in agricultural planning." See page 55, 1a, of the report, *Regional Planning, Part XI, The Southeast, 1942*.

² Such research efforts as *Virginia's Marginal Population—A Study in Rural Poverty*, Bulletin 335 of the Virginia Polytechnic Institute, July 1941, by William Edward Garnett and Allen David Edwards, are of great importance in supplying the data needed in planning economic strategy.

which southern agriculture has been laboring. Freedom from want is an unachieved goal. The historic phrase concerning the ill-fed, ill-clothed, and ill-housed is still true.

What is new and important now is that the need for basic adjustment has become interlocked with the problem of what to do on demobilization day. Few want to go back to pre-war conditions. The development of war crops—in fact, the entire war-production-goals program—has shown what can be done in the way of expanding production when the proper economic setting is provided. Loss of labor to the draft and to industry and consequent farm combinations have demonstrated to entire communities all manner of economic arrangements and opportunities not fully realized before. The need for adjustments has become in a real sense the need for *plans*. Technical workers, social scientists, and administrators are expected to suggest ways for maintaining advances already gained and to develop new and better economic organizations. The manner in which political leaders and program directors hang over the shoulder of social researchers increases the feeling of urgency surrounding development of methods for capturing the magic formula that will make agricultural adjustments easy. This formula will likely remain obscure; the problems will be attacked with whatever knowledge and experience is at hand. Let us look at the major problems and indicate the direction of adjustment generally agreed upon. This will put us in a position to understand better the assumptions underlying adjustment objectives.

Major Problems

Problems of agriculture in the Southeast fall into three major categories: (1) Those of economic organization and operation of agricultural resources; (2) those of developing harmonious relationships among agriculture, industry, and commerce; and (3) those of reorienting social and economic outlook or philosophy as they affect agriculture.

Examples of problems from these fields will suffice to show the complexity and importance of agricultural adjustment in the region. In the field of economic organization and operation, the development of types and sizes of farms suitable to the resources is among the chief tasks. Hundreds of small farms and subsistence homesteads, large areas of unused and tax-delinquent land, and countless maladjusted commercial farms are the result of periods of

economic stagnation. Unfortunately for the South, these periods have been so frequent and prolonged that protective devices used by farm families to avoid disaster have become, in many cases, permanent organizational characteristics of the agricultural community.³ The problem of adjusting the farm plant to achieve efficient utilization of the varying economic and physical resources and capabilities is a task altogether too large for many individual farm organizers.⁴ According to most exponents of the "progress by adjustment" philosophy, only through careful investigation of national needs and through knowledge of regional resources can desirable organizational methods be determined.

These and similar problems lead us to the consideration of the second group in this review of major adjustment fields—those of the interrelationship of agriculture to industry and commerce. Though there is a diversity of opinion among social scientists as to the number of workers who can find productive jobs in southern agriculture, almost all of them agree that in past years there has been an excess of population in most agricultural areas under prevailing methods of production.⁵ Similarly, all are agreed that the labor drain-off by war industries has greatly improved the opportunity for efficient use of remaining workers. It is through greater cooperation with industry and commerce that social researchers hope to relieve agriculture of its underutilized laborers and managers. The direction of adjustment now shaping in the minds of social scientists and taking place in the field due to development of war industries is definitely toward a more commercialized agriculture dependent on thriving regional and national industries and trade.

This new organization of agricultural resources and the expansion of industry suggests the third group of major problems—those of reorienting social and economic philosophy. Clearly, the two major groups of problems discussed above can have no solution separate from a redirection of the prevailing social outlook. Characteristic of the region are the well-entrenched attitudes of farm people and, to a lesser extent, of professional workers who ac-

³ Read the discussion and look at the maps in *Southern Regions of the United States*, by Howard W. Odum, and *Human Geography of the South*, by Rupert B. Vance. The characteristics mentioned here are pictured in these books through the use of numerous statistics.

⁴ Regional Planning, Part XI, The Southeast, pp. 47-82.

⁵ *Virginia's Marginal Population—A Study in Rural Poverty*, introductory pages.

cept subsistence living for a large segment of the population, certain types of live-at-home programs, and low wage rates for many types of workers. The easy acceptance of inequalities in income due to class and race, rather than to productive potentialities, is a paralyzing social viewpoint which must be overcome before successful adjustments in agriculture can be achieved.

Assumptions and Goals Underlying Adjustment Objectives

Keeping in mind the major groups of problems, we are ready to consider the underlying framework of ideas and assumptions on which social scientists and administrators are building their plans. The following outline sets forth in abbreviated form what seem, after many months of questioning and discussion with agricultural workers throughout the Southeastern States, to be the essential viewpoints uniting social scientists, planners, technical workers, and administrators, as well as progressive citizens, in their work and thought toward a sounder agriculture and a more efficient, fully operating, general economy.⁶

The points summarized here cannot be considered as unanimously accepted opinions. No one of the contributors would claim a faith in all of them. To arrive at any individual viewpoint would require a multitude of additions and subtractions from the summary. Like the views of a large family, these ideas are held tenaciously together through a common interest and a historic association with what is commonly believed to be the higher aims of or general good for agriculture.

A. General assumptions:

1. It is reasonable to plan for full productive employment and optimum utilization of our material resources. While we may fall short of this objective, it is only on this basic assumption that adjust-

⁶ It was not easy to get free expressions of basic viewpoints toward the problems of economic adjustments, even from those engaged daily in various phases of adjustment planning. Questions directed at obtaining fundamental viewpoints of planners and their bases for recommending various adjustments are much more likely to stir the imagination to paroxysms of uncertainty than to bring out concrete statements of beliefs and goals. No one will think this unnatural. Indeed, one would be very leary of unhurried, carefully calculated answers to questions of fundamental economic adjustment at this stage in economic affairs. Even for those who believe firmly in the line of economic adjustments which they recommend, the magnitude and significance of the task is frightening. The basic issues are so important, so individual, so personal: They are about the kind of world we want. That such questions should arouse defensive and forced answers, sometimes tinged with emotion and sometimes with vested interest, should surprise none.

ments can be developed with full consideration for individual, community, state, and national interests. In the determination of policy, short-time considerations, within the framework of democratic procedures, must often be given precedence over direct action toward longer-time objectives.

2. The farm family is the indispensable core of American agriculture.⁷ Development of economic and social resources in agriculture, so that farm families can produce abundantly and derive a satisfactory level of living from their efforts, should be the objective of all rural people and of those who attempt to aid them. Clearly, it is poor policy to attempt to maintain in full-time agriculture those families whose resource-setting would not permit economical commercial production or adequate levels of living on a self-sustaining basis.
3. It is believed that through new knowledge, new skills, and new outlook, individuals can increase their economic worth and social position, and that it is desirable for every man to be afforded opportunities to improve his own condition, even though the improvements he himself may make are not at first so great as those which could be achieved for him through direct planning of his affairs.
4. Economic and social security with prevailing standards should not be the ultimate goal sought in agricultural adjustment. Rather, the aim should be the development of active and informed thought and processes capable of setting new goals and achieving new heights as new opportunities appear.
5. The positive functions of Government—that is, the establishment, through democratic procedures, of “new rules of the game,” such as balancing production, regulation of the flow of trade, modifications in the distributions of the national income, and development of the opportunity for reaching minimum standards of health and nutrition—are necessary and desirable.

B. *Assumptions concerning agriculture:*

By assuming active interest on the part of Government and willingness to organize and plan for mutual assistance on the part of agriculture and industry, technical workers and administrators have a basis from which to consider the specific steps to meet post-war problems. General assumptions, particularly concerning agriculture, which lay the basis for specific problem planning, may be described as follows:

1. Agriculture in the post-war period must be efficient if it is to meet the competition in the world market that will result from free exchange of goods among nations. In this case, efficiency will mean

⁷ For a detailed description and statistical analysis of the farm family and the place of the farm family in agriculture, read Dr. O. E. Baker's contribution to the book, *Agriculture in Modern Life*, by Baker, Borsodi, and Wilson, Harper & Bros., N. Y., 1939.

the production of those commodities for which there is a comparative advantage in each area.⁸

2. The family-sized farm has for many years been held as a desirable goal in southeastern agriculture.⁹ It is still a desirable goal, but many agricultural leaders believe that the tendency to sacrifice economic principles in order to develop as many family farms as possible is now doing southern agriculture more harm than good. Among basic assumptions in post-war planning, those which make the establishment of farms and farm plans depend on sound economic goals will rank very high. The farm of such size or land-use capabilities, or of such degree of organization as to require continuing public subsidy, can make no permanent contribution to the agriculture of the region.

Where, in the interest of efficiency, physical resources or capital requirements necessitate a large-scale unit, cooperative operation of the unit or processing of the farm products may be a solution. Farm woodlot cooperatives are now successfully operating in the Southeast. Where tenure patterns are favorable, large-scale units under private ownership are equally desirable.

3. The objective of efficient family-sized farms would be greatly weakened by a back-to-the-land movement following the war.¹⁰ Everything possible should be planned to prevent the need for the return to agriculture of those industrially employed, recognizing that many war-workers having close ties in rural communities will desire to enter agriculture. The following possibilities for profitable employment of those returning to agriculture are envisioned:
 - a. As farm owners, managers, or tenants.
 - b. As members of a cooperative farm or woodland enterprise, or as workers on large individual or corporate holdings.
 - c. As employees in small service-type industries, a kind of industry greatly needed in the Southeast.
 - d. As government employees (local, state, and Federal) engaged in some constructive development on the public domain—e.g., forests, flood-control works, and large-scale conservation projects.

⁸ Some significant observations relating to the social consequences of increased efficiency of agriculture, the increasing efficiency and changing character of business and industry, and of depression dislocations are made in *Virginia County Conditions and Trends of Social Significance*, Bulletin 291 of the Virginia Polytechnic Institute, August 1933, by William Edward Garnett and Aja Cleo Seymour.

⁹ By "family farm" we mean a farm on which the operator, devoting substantially full time to farming operations, with the help of other members of his family and without employing more than a moderate amount of outside labor, can make a satisfactory living and maintain the farm plant. Thus, family farms should and do vary greatly in acreage, depending upon the kind of farming, size, and composition of the family, and other factors.

¹⁰ Garnett and Seymour, sociologists at Virginia Polytechnic Institute, conclude that a large increase in rural population is likely to mean a movement of many farm people toward the European peasantry status.

4. The level of managerial ability is probably the greatest handicap to attainment of efficient family-sized farms in the Southeast. As farmers grow in ability to manage their own farms and cooperative enterprises, a series of events is set in motion which will lead directly to greater productivity and, through improved income, to a happier relation with the industrial life of the Nation.
5. The programs now serving agriculture must develop a unified approach to agricultural problems. There is a growing feeling that the "action program" and the "government payment" approaches are falling short in performance because of lack of cooperation and understanding among agencies. Agricultural adjustment, conservation, and management techniques should be carried out as parts of a unified agricultural effort.
6. The achievement of a proper balance between potential industrial and agricultural resources will promote development of economic farm units. The South is in great need of service industries. The home-financed industry, especially the small processing and service-type (cold-storage lockers and repair shops, for example), should be encouraged in agricultural areas. Agricultural communities will support many of these. It is important that the industries be on a sound economic basis. The old practice of offering financial inducements to encourage industries to locate in the South is not sound. Those industries seeking to exploit cheap labor or planning to pay low wages on the assumption that their workers get their living from self-sustaining farms should be discouraged.
7. Federal works projects may be necessary during the transitional adjustment periods of the post-war economy. In all cases, they should be undertaken only after their long-time economic benefits have been demonstrated.
8. Payments for economic adjustments of crop and livestock enterprises should be made on the basis of specific conservation performances and for the assumption of risks involved in these undertakings. Distribution of adjustment payments on this basis makes possible numerous fundamental changes in systems of farming and the size of operating units.
9. If the gains in diversification made possible by wartime developments are to be incorporated into a permanent post-war program, marketing, transportation, and distribution must be more fully coordinated and further developed.
10. Provisions for better health, largely through encouragement and support of improved dietary habits, are widely recognized as an essential element of sound adjustment planning. Rural-housing programs and rural hospital facilities, as well as those programs and plans designed to make more nutritious foods available to farm families, are a vital part in efforts to improve health.
11. The proper use of credit, both public and private, is believed by most agricultural leaders to be a powerful tool for directing and promoting desirable adjustments and developments. The full use of credit as an aid in agricultural adjustment will be necessary.

12. Farm laborers and farm youths are more secure, according to technical workers, in their economic and social position under an agriculture built around the family-sized farm than under any other form of land management. The development of better leasing systems will start the enterprising laborer on the way to ownership. The conservation and promotion, through education, of numerous mechanical skills developed by farm youths as a result of the war will be a great stimulus to industrial developments. As industrial opportunities arise, the educational system of rural communities should be so organized that some rural youths will be trained for nonfarm employment.

C. *Unifying concepts:*

In introducing the assumptions presented above, on which current and proposed agricultural adjustment undertakings rest, it was implied that they were held together by certain unifying concepts which might be expressed in terms of the three major problems discussed. This is done in the following statements:

1. *Assumptions relating to the economic operation and organization of agricultural resources.*—From these working assumptions it is evident that social scientists in the Southeast believe there is a wide latitude in which the individual, as an individual, can further personal and community welfare by independent economic action. This thought is apparently stimulated as much by the belief that the Government in the post-war period will be short of dollars to spend in undertakings of doubtful economic importance and outright relief measures as it is by any traditional view of the virtue inherent in independent economic activity. Numerous social scientists interviewed in this study urged that researches be made to "determine where conservation programs, public construction projects, et cetera, have a chance of being economically useful to the country as a whole . . .," indicating a belief that sound plans will need to provide elsewhere economic opportunity for the population of economically depressed areas and will not seek to hold large blocks of population in uneconomic positions through government assistance.

Of special significance is the number of suggestions bearing more or less directly on the question of subsistence farms, live-at-home programs, and other types of "subeconomic" processes.

With the exception of a few outspoken supporters, the feeling is general that such plans are far too expensive to be maintained in a nation depleted by war—a nation, we are told, called on to produce and produce efficiently both agricultural and industrial products for home people and depressed populations around the world. Though conscious of the need for improved diet for most southern farm families, social scientists believe it unwise to encourage large numbers of farm families to feel content with subsistence living.

Carrying this thought into the field of public work and agricultural-

industrial relations, others contend that while there is every reason to believe that works projects can be profitably used during emergency periods in improving the resource base and public facilities, it must be made perfectly clear that subsistence communities clustered around small "button factories" or other plants represent an inadequate and almost foolish attempt to attack economic problems. Little encouragement can be given to the concept of subsistence farms as a planning goal, and sheltering them in the forests of economically depressed regions makes them no more desirable. Clearly, "little farms for little people" is not the admitted goal of serious planners in Southeastern agriculture.

2. *Assumptions relating to development of economic relationships among agriculture, industry, and commerce.*—Most of the scientists contributing to this review are conscious of the need for integrating the several elements comprising the economic life of the region. The clearest expression of this view came from those who, knowing the approximate needs for goods, would work toward the production of those goods first from the economically most productive resources, proceeding to the less productive until the need was filled, believing that this plan for utilization of resources is the one most likely to secure economically productive employment for every segment of the population. The solution of population problems is thought to be largely achievable through economic reorganization. The naive cry of general over-population is now almost universally considered by economists as a result of widespread uneconomic resource utilization and lack of working order between agricultural and industrial enterprises, rather than a chronic social condition.
3. *Assumptions related to reorienting the social and economic outlook.*—The feeling that agriculture must find its future as the Nation finds its future is another unifying element. A whole array of assumptions touches directly on this major field. The idea of economic utilization of resources and full employment of labor, for the production of national needs and for strengthening the general economy, are in essence assumptions dealing with reorientation of social and economic outlook. The popular feeling toward uneconomic types of employment, toward low and inadequate wage rates, toward poor and substandard working conditions, as well as numerous prejudices concerning class and race, must be abandoned in the interest of newer and more workable social and economic views, if the assumptions in the fields of economic organization and agricultural-industrial relations are to achieve their full potentialities. The problems of race and established customs are of the greatest importance in the Southern States, and every study must take them into consideration and recognize the modifications which their presence requires.¹¹

¹¹ Cf. Perkins, Almon E., *The South, Its Economic-Geographic Development*, Wiley & Sons, N. Y., 1938, ch. 1, pp. 16-20.

Obstacles to Securing Successful Adjustment

The obstacles to securing adjustment in agriculture are essentially the same hindrances to social change found in any field. They include (1) public and private inertia toward social and economic adjustments, (2) lack of knowledge for dealing with social and economic problems, (3) unwillingness to jeopardize vested interests and privileges, (4) disagreement concerning social goals, and (5) lack of leadership.

The day-to-day work of most citizens leaves little energy for thinking about social problems. It is easy to delay plans for improving old ways of doing things. Many citizens believe that the study of social goals is outside their field of activity. The uncertainty of the future must be borne, but why should it be complicated by thinking up new ways of doing things? In the field of social invention, that which is new or novel is held in much greater distrust than in the field of physical invention.

Among citizens and students, lack of knowledge concerning social and economic matters is one of the chief obstacles to achieving satisfactory adjustments in agriculture. Even in the field of public health the great publicity programs of a score of government and private agencies have only begun to remove the obstacles of public ignorance and apathy. The complex nature of certain economic problems makes the education phases of successful adjustment undertakings long and costly.

Every change of a social nature places in danger numerous vested interests or privileges. There is a general unwillingness throughout society to disturb these rights, lest the interest of all be placed in danger. Hence they represent an obstacle slowing the movement of adjustment.

Dissatisfaction with economic or social goals, particularly the short-time goals, is a major hindrance to agricultural adjustment. The schism between those who see agriculture as a way of life and those who see agriculture as a business engaged in producing food is very real and represents an element paralyzing successful adjustments. The difficulty of embodying the wishes of the minority in economic and social plans makes this obstacle all the greater.

In a democratic society the feeling of a need for *leaders* represents a real danger signal. A belief that the political leadership provided by elected officials is not enough to solve the problems of the day

is almost certain to be a sign that all is not well with the political system. As yet, no successful technique for making the best use of political leadership in planning adjustment has been devised. The feeling of need for social leaders has been growing stronger for a decade. The trend in other nations has been toward strong leadership in the social and economic fields. Here, the problem of leadership for attacking social problems has been let slide, no successful method for recruiting leaders from the general society has been devised, and no practical method found for inducing in elected political leaders serious social thought. This grave problem raises one of the chief blocks to all types of social adjustment. Herein lie some of the antagonisms which exist between those who believe in planned societies and those who believe in what is commonly called "free enterprise" or capitalistic societies.

*The Place of Private and Public Action in Achieving
Social Goals*

In a democratic society faced with serious economic problems and running under partial dictatorial control due to war emergencies, there is no more difficult and certainly no more important social problem than that concerned with establishing the place private and public action should take in economic adjustment once the war (but not the economic and social) emergency is past. At what level must personal wishes, desires, and temperament be the sole judge of social action, and at what level do collective interests supersede individual interests? All-inclusive economic planning certainly would leave little room for individual freedom. Adjustment planning on less than an all-inclusive economic scale can be a vehicle for diverse individual contributions and a very high type of statesmanship. Clearly, the term "adjustment," when used in connection with social and economic planning, implies certain compromise. "Progress by adjustment" involves a good deal of the old-fashioned idea of trial-and-error technique, so long the training ground of individuals and nations. All-inclusive economic planning is another matter. The essence here is movement toward a fixed goal by as straight a line as can be forced; naturally, individual aims and wishes are crushed. The result of full-scale economic planning is not freedom, but stagnating subservience to a plan which may at one time have been good, though soon old and unsuitable, yet

vested with powers that prevent change. In a democratic society where adjustment planning is accepted as a method for improving common conditions, the individual is called on for a high degree of public service in pointing out fields for profitable group action and in suggesting methods. The minority viewpoint helps shape the direction of adjustment. Adjustments to social and economic problems need not rely on the forces available to government alone but may be achieved by voluntary organizations of independent citizens or businesses.

The intensifications of social and economic life in industrial nations have brought new forces to bear on government—forces impelling the adoption of policies and action procedures in fields once held to be solely private.

A well-recognized job of modern governments is aiding individuals toward their social and economic goals through plans for acquainting them with national needs and helping, through research and generalized educational programs, to synthesize the goals and interests of various segments of the economy. This job was once a relatively simple one and could be effectively undertaken by citizens under a decentralized government. The demands upon governments for more complete assistance toward personal goals and for more accurate syntheses of social and economic interests have grown as society has become more complex and individuals more dependent upon mutual adjustments to social problems. In those fields where individuals or voluntary associations of individuals are able to effect desirable adjustments, the role of government has remained passive; but in cases where adjustment is poorly effected, the pressure on government to act has been increasingly great. That modern governments will be called on to stabilize wages and income, regulate hours of labor, and control prices and rents is almost certain. Modern governments are impelled, through failure of private attempts, to become active in these fields.¹² The extent of governmental controls in post-war economic life depends almost solely on how well individuals understand the scope of modern social and economic problems and how actively adjustments to new conditions are made through private foresight and initiative.

¹² In the 1942 proceedings issue of *American Economic Review*, Mr. James M. Baker (of Sears-Roebuck and Company), Mr. Alan R. Sweezy, and Mr. Adolf A. Berle, discuss some of these problems. These articles are of great interest to all economists concerned with understanding the growing place of government in economic life.

THE PROBLEM OF POST-WAR LAND SETTLEMENT AND AGRICULTURAL PRODUCTION

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FARMS for returning servicemen have been a topic for discussion during every major war and are now being considered again as a way of providing jobs, homes and employment for veterans. Current proposals include legislation which would provide long-term low interest loans to war veterans for the purchase of homes and farms, and would accord them preference in the selection of public domain lands or lands in projects to be developed with public funds.¹ States as well as the Federal Government are giving attention to post-war employment. Several States, including Wisconsin, have appointed commissions to investigate and plan for post-war employment opportunities in agriculture as well as in other fields of activity. Other nations too, are developing programs for soldier land settlement. Canada has enacted land settlement legislation and is already providing farms for returning war veterans who are qualified. South Africa is in the process of preparing thousands of holdings for post-war allotments to war veterans.

Many governments have undertaken special land settlement programs after past wars. Several European countries have broken up large land holdings to obtain fuller utilization of the land as well as placing ownership in the hands of those working on the land. Younger countries, such as the United States and Canada have promoted land settlement, not because of the need for greater domestic supply of food or for the social objective of breaking up concentrations of ownership, but rather to conquer the wilderness and

¹ On June 21, the President signed the Veterans' G. I. Act (Public Law 346) which among other things provides for the guarantee by the Government of 50% of a loan not to exceed \$4,000 at an interest rate of 4% per annum and may extend over a period of 20 years. The interest for the first year on that part of the loan guaranteed is to be paid by the Government. No security is required for this loan and it does not restrict the amount that a veteran may borrow using his property as security. In any case wherein a principal loan is approved by a Federal agency to be made or guaranteed or insured by it pursuant to applicable law and regulation and a second loan is required the administrator may guarantee the full amount of the second loan up to \$2,000. As an illustration, the purchaser of a \$10,000 farm may borrow \$7,500 from the Farm Credit Administration (\$5,000 on first mortgage and \$2,500 on a Commissioners loan), and in addition borrow from any credit agency in additional \$2,000, unsecured by guarantee through the Veterans Administration. In acquiring a \$10,000 farm, it is thus necessary for a veteran to have only \$500 of his own or family funds.

complete the occupation of the land. Soldier settlement has been a means by which to accelerate these processes and to reach the objectives desired. Coupled with these objectives is the belief that a strong nation needs a large rural population and that life on the farm provides the individual with job security as well as a home.

Soldier settlement programs will probably be promoted after this war for the same purposes as after previous wars. War-ravaged nations will desire to rehabilitate their agriculture as soon as possible and in the process, may achieve success in obtaining more widespread adoption of improved production techniques. Increased production and a greater degree of self-sufficiency in food production will be the result. Backward nations also will seek to modernize their agriculture so as to have more products for home needs as well as surplus for export.

The results of our own post-war land settlement and increased production programs will depend in large part upon developments in other countries and upon our foreign trade policies. As a nation we have, in the past, exported large quantities of cotton, wheat, meats and other farm products. In the last decade increased production in other new countries resulted in curtailed exports from this country and a piling up of surpluses. However, during the war the demand for agricultural products has again reached a point where it is necessary to encourage use of latest production techniques as well as to use all available agricultural land. This increased demand has resulted largely because of increased purchasing power at home and the great demands of our armed forces and allies for food.

Can we expect to maintain farm exports to the extent now possible because of lend lease? Will our own National needs be as great in peacetime as during wartime? To what extent can production be increased on present full-time farms if greater utilization is made of improved practices and conservation methods of farming? Do we need more people on the land? Will achievement of full employment result in need for more food? What are the requirements for a good farm and a successful farmer? Post-war land settlement policy must take into account these and other questions if we are to have a healthy and prosperous agriculture. The interests of the public, of the farmers as a group and of the individual settler are at stake.

What is the Future Need for Farm Products?

It is estimated that about one third of the Nation's current farm production is required for our armed forces and allied nations. Even so, the civilian population as a whole, is enjoying more adequate diets than before the war.

Requirements for exports will remain high immediately and for about 2 years after the war when agricultural rehabilitation in the war ravaged countries will be completed. After that our exports of farm products will probably decline. This Nation cannot expect to be a leading exporter of farm products if it is to maintain a leading position in world markets in the production of manufactured products. This Nation's skill in manufacturing makes it desirable to export finished products and import raw materials and certain food products. We certainly cannot continue to barter for gold, only to bury it underground. Neither is it likely that we shall continue indefinitely to export on credit.

High levels of income and full employment may result in greater civilian consumption but it is doubtful that it immediately can absorb any large loss of export markets. Higher incomes may result in a shift towards greater consumption of animal products, fruits and vegetables. Such a shift in demand may result in fundamental shifts in production and land use but not necessarily in a need for additional new land. A realistic view leads one to conclude that exports of farm products will decline after the war and that with full employment domestic requirements will be increased primarily by the increase in civilian population. Any fundamental change in diets probably will take place too slowly to be used as a basis for the development of a land settlement program for the immediate post-war period.

*More New Farms vs. Increased Production
on Existing Farms*

Approximately 300,000 new farms could be created after the war, if needed, through irrigation, drainage, or clearing and through return of some military lands to their pre-war use in agriculture.² The rate at which these new farms can be created depends to a large extent upon the completion of relatively large public works proj-

² "What Post-War Policies for Agriculture?" *The Farmer and the War*—No. 7, U. S. Dept. of Agr. January 1944.

ects. Examples of these are the Columbia Basin project in the State of Washington where irrigation will make 750,000 or more acres of land suitable for intensive agriculture and new settlement, and the Mississippi Delta where drainage and flood control could make about 5,000,000 acres of land available for settlement. Smaller irrigation projects can be established throughout the Western States and, if needed, numerous areas in the East and South can be reclaimed through drainage and clearing. Clearing of cut-over timber lands in the Pacific Northwest will provide new land for new farms. Small scattered areas in the cutover sections of the Lake States as well as in Maine may also be considered as suitable for agricultural development.

Development and settlement of new land should be based first on the need for food and fiber products and the possibility of obtaining the needed products from existing farms and secondly upon the demand for land as homes for persons looking for employment opportunities. Success attained by settlers on new land will be materially affected by production trends in established areas. Agricultural production on existing farms can be increased by at least 10 to 20 percent within the next few years if present conservation programs and other trends towards intensification on suitable land are continued and expanded. Major emphasis on the utilization of public funds to obtain increased production by these methods may be more desirable than to bring large areas of new land into production. Furthermore, such accomplishments would mean improvement of security and levels of living for all farmers on suitable land. They will mean too, the stabilization of farm resources for future social welfare. The possibilities of expansion of production on present farms, together with probable limits in market demand for agricultural products produced in the United States, make it wise to proceed with caution in developing new lands. Special caution is required on new land requiring large expenditures for development and for lands that may not be sufficiently productive to compete favorably with land already in production. Unwise expansion could result in disaster to new settlers and also in unwarranted competition with present producers if the products from new lands are not needed.

Better land management and greater utilization of improved crop varieties have come to the front during the past few years. Development of hybrid seeds and new crop varieties on the one hand and greater utilization of lime and fertilizer on the other have re-

sulted in large increases in yields of certain crops. The great amount of farm products now being produced indicates that improved production techniques and management are bringing results.

The food production increases made possible by the greater use of limestone and fertilizer have in large part resulted from our past conservation programs which include benefit payments for conservation practices and technical assistance in the development of improved land management. Farmers generally have learned the value of limestone and the trend in amounts used has been steadily upward, from about 3,750,000 tons in 1929 to about 6,300,000 tons in 1936. The inclusion of liming as a conservation practice in the AAA program helped push the utilization of limestone to nearly 21,000,000 tons in 1942.³ Similarly, benefit payments helped boost the use of super-phosphate from about 3,150,000 tons in 1936 to 5,350,000 tons in 1942.⁴ It is generally agreed that good farm and land management requires still further expansion in the use of limestone and fertilizer. The increased production obtained so far from these practices, therefore, represents only a beginning.

Other types of conservation practices include such things as strip-cropping, cultivation on the contour, and terracing to prevent soil erosion and to conserve moisture. Such practices help to stabilize agricultural resources and also to increase yields. Much of the cropland topography in the Nation is such that contouring is beneficial if not almost essential. That only a beginning has been made in these types of conservation methods on existing farms, can be easily observed from the roadside, and from the fact that farm and range conservation plans have been made by the SCS on only 283,000 farms and ranches out of a possible total of more than 3 million full-time units.⁵

Increases in corn yields in recent years illustrate the combined effect of hybrid varieties, good land management, and greater utilization of lime and fertilizer. Corn yields on typical cash-grain farms in the Corn Belt fluctuated between 30 and 40 bushels per acre during the period 1910 to 1933. However, during each of the years 1937-1942 they exceeded 40 bushels per acre.⁶ The greater yields

³ *Agricultural Limestone Applied on Farms in the United States, 1929-1942*. U.S.D.A. Division of Special Programs, A.A.A. December 27, 1943.

⁴ *Estimated Total Production of Superphosphate in the United States, 1929-1943*, U.S.D.A., Agricultural Adjustment Agency, January 20, 1944.

⁵ *Report of the Chief of the Soil Conservation Service, 1943*, U.S.D.A., October 1943.

⁶ Goodsell, Wylie D. "Farm Adjustments and Income on Typical Corn Belt Farms," U.S.D.A. Circular No. 688. Washington, D. C. November 1943.

in recent years represent an increase of more than 25 percent and suggest what might be accomplished by more widespread utilization of improved management practices.

The Middle West Soil Improvement Committee estimates that about 1 billion bushels of corn, or 12 percent of the total crop for the 1941, 1942 and 1943 crop seasons, represents increased production due to introduction of heavy yielding hybrid varieties. Similarly, large wheat crops in the spring wheat area, during recent years with weather conditions favorable to rust, is chiefly a result of the development and extensive growing of rust-resistant varieties.

It is probable that response from good land management practices is greater in the Corn Belt than in other sections of the country. Furthermore, improvement in crop production presents greater possibilities than in animal production. It is not to be concluded, therefore, that it is possible to obtain an over-all increase in farm production comparable with increase in corn yields. However, carrying capacity of the range can be increased through controlled grazing and range land improvement. Similarly, the use of tillage practices that conserve moisture and the use of improved varieties bring increased yields in the semi-arid sections of the country where it is not feasible to use much fertilizer.

Because of increased production possibilities on existing farms it will be wise to have a conservative public policy for new land development after the war. The new lands that are to be developed should be of such quality as to compare favorably with existing areas that give generous response to good management. On such new lands settlers will be able to succeed and to improve their position by being able to utilize latest developments in production and management techniques. Settlers on new lands unsuitable for permanent use in agriculture will find themselves fighting a losing battle, and abandonment of the land will be the result. Operators on existing marginal farms and on inferior land may also be forced to abandon farming if their lands are not suitable to permanent agriculture and do not respond to improved methods of production.

Increased Labor Efficiency Means Fewer Workers Needed on Farms

With a continuation of the trend toward greater output per worker it can be expected that the number of gainfully employed

persons needed on farms will continue to decrease or to remain about the same even with an increase in agricultural production and total population. If levels of living among farm people are to keep pace with that for the Nation as a whole, it is essential that there not be a general back-to-the-land movement by industrial unemployed and returning war veterans in excess of the capacity of agriculture to absorb them.

The reduction in number of persons employed in agriculture has been due in large part to the shift of many operations in agricultural production from the farm to the city, such as the production of tractors instead of colts. Many steps in the processing and marketing of farm products formerly done by farmers themselves have also been transferred to the city or to nonfarm workers operating in rural areas, such as truckers and other custom workers.

The use of mechanical equipment has lowered the labor requirements for many farm jobs. Using cash-grain farms in the Corn Belt as an illustration, the production of one acre of corn in the years 1910-14 required 19.5 man-hours as compared with 10.3 man-hours in the period 1938-42.⁷ Similar reductions in man-hours took place in the production of other grain crops. Increased efficiency in carrying out farm operations has enabled farmers to enlarge their businesses through added enterprises and greater intensification on the same land area as well as through increasing the land area of the farm. Increasing the size of farms by adding more acreage usually necessitates a displacement of other farm operators and is a trend that is taking place in most of the better farming areas of the Nation.

With the exception of increases during the depression years of the past decade, rural farm population has remained relatively stable for the past 20 years. The number of persons employed in agriculture was about 10,700,000 in 1920, about 10,500,000 in 1930, and decreased to about 8,400,000 in 1940.⁸ Over the past 20 years there has been a net movement of persons from farms to the cities. With the birth rate on farms being greater than necessary for farm population replacement needs, it is evident that not all farm reared youth can find employment on farms. A study in Missouri shows

⁷ Goodsell, Wylie D., *Farm Adjustments and Income on Typical Corn Belt Farms*, U.S.D.A. Circular No. 688. Wash., D. C. November 1943.

⁸ Hopkins, John A., *Changing Technology and Employment in Agriculture*, U. S. Dept. of Agriculture, May 1941.

that there are farm employment opportunities on existing farms for only 53.8 percent of the farm reared males.⁹ When it is realized that many farm boys now too young for service in the armed forces as well as farm folks now in war factories will desire to farm after the war, it is evident that there will be farm opportunities for only a limited number of returning war veterans. The normal movement of people has been from the farm to the city. It is likely to continue so in the future.

*Conservative Settlement Policy Needed When Land
Values are High*

Land values as well as trends in farm productivity and labor efficiency influence the chances of success for a new farm operator. A new farm operator who attempts to purchase a farm at a time when land values are excessive will have two strikes against him at the outset and his chances for future success will be jeopardized. Liberal credit terms to enable an individual, with limited means, to acquire a farm during periods of high land values may later prove to have been a disservice to the individual and a financial loss to the credit agency. Even the best operators cannot succeed if too high a proportion of the farm income must be used to service mortgage indebtedness. A war veteran spending his mustering out pay and other types of benefits would be spending his money to service vanished values if he makes large borrowings to acquire a farm when prices for land are excessive. The speculator, former land owner, or financier would get the benefits rather than the war veterans for whom they were intended.

Farm land values in the United States during and immediately after World War 1 give an indication of probable future trends. Farm land values rose phenomenally during and after the war and in 1920 reached a level which was 170 percent of the 1912-14 average. When the market demand for agricultural products declined, the price of farm products declined and brought with it a deflation of land prices. The decline began in 1920 and by 1933 reached a low of 73 percent of the 1912-14 average. Since 1933 land values have risen continually and for the year ended March 1, 1944 the Bureau of Agricultural Economics index was 15 percent above March 1, 1943. Average land values for March of this year for the United

⁹ Lively, C. E. and Almack, R. B., *Rural Population Resources of Missouri*, Missouri Agr. Experiment Station Research Bulletin 306. November 1939.

States as a whole were about 138 percent of the 1935-39 average and 114 percent of the 1912-14 average.¹⁰

The extent to which land values will continue to rise during the remainder of the war period and immediately thereafter will depend upon a combination of factors: the future trend in costs and returns from farm production, the extent of future demand for land as a business or hedge against inflation, the duration of high demand for farm products, and the success of public measures that might be taken to curb speculative buying and excessive rise in values.

Large scale public programs to assist war veterans and others to become farm owners immediately after the war would have an inflationary effect upon land values. Wise public policy, therefore, would encourage prospective farmers to begin as tenants and withhold purchasing until land values have stabilized. Farm purchases should be made only when it appears that the price is reasonable and the productivity of the farm such as to warrant paying the prices asked. It is important to recognize, however, that individuals who desire to purchase additional land to enlarge their farms can safely pay more for land than can those who are just entering the farm business and must acquire an entire operating unit. The former can charge all of the farm overhead and family living costs to the home place, whereas the latter must pay for all these out of the proceeds of sales from the new purchase. Farm and land purchase programs after the war need to be tempered by circumstances of the individual as well as the general level of land values.

*Successful Farming Requires Full-Time
Operation by Qualified Operator*

Full-time economically sound farms operated by individuals who like farming as a way of life and have in addition the necessary experience, training, and ability are basic requirements for success in farming. Success of the individual operator and his family depends in large part upon the degree to which these requirements are given recognition in the many public programs designed to assist individuals in becoming established on the land. A new farm operator should have the opportunity of developing a full-time productive

¹⁰ Regan, M. M., Clarenbach, Fred A., and Johnson, A. R., *The Farm Real Estate Situation, 1942-43*, U.S.D.A. Circular 690, Washington, D. C. *Current Developments in the Farm Real Estate Market*, Processed release by U. S. Dept. of Agr., March 1944.

farm of such size as will provide a comfortable level of living for himself and family. Farms of 40 or even 80 acres in size should not be established in areas where experience has shown that 160 acres should be the minimum.

Small farms for part-time operations are often suggested as a way for families to enjoy the benefits of both country living and city employment. It is thought that an extension of part-time farming will give many returning war veterans a chance to get a portion of the land they fought to defend. Part-time farming is sound for those who have secure nonfarm employment or steady income from other sources. A part-time unit is primarily a home—not a business. It is not a substitute for a full-time economically sound farm enterprise.

It is doubtful that the Government will develop programs to give a grocery store, a liberty ship, a shoe factory, a cotton gin, or a flour mill to every returning veteran who expresses a desire to have one. It would be no more far-fetched to set up such programs than it is to foster the idea of "40 acres and a jeep" for everyone who expresses a desire to have a farm. The issue would be less confusing if the principle were firmly established that a farm must first be a business if the operator is to succeed at farming. In the words of the authors of *Roots In The Earth* ". . . It is cant to talk about farming as a way of life unless the farming enterprise is first economically sound."¹¹ Little is said about the advantages of the independent grocery business simply because the operator often resides in the same building.

The farmer as well as the farm must come up to certain standards. Farming in most parts of the country is a type of occupation which requires that the operator be both a manager and a worker. If he is a hard worker but a poor manager, the fruit of his hard labors may be wasted—unless salvaged by the wife. A good manager who desires to carry on only the business end of farming will in most instances find that the management and bookkeeping are excessive in relation to the size of the farm business. On some of the farms in the Nation, it is possible for the operator to be strictly a manager, but on the majority, both labor and management must be performed by the operator and members of his family.

In general, both the prospective farm operator and his wife must

¹¹ Waring, P. Alston and Teller, Walter Magnes, *Roots in the Earth*, Harper and Brothers, New York, 1943.

have a liking for farm living if they are to succeed at farming. Many frictions may arise if some of the family members who are to share in operating the farm prefer city living and city occupations to conditions on the farm. Working hours on the farm are longer than in the city and in most instances the individual must work alone without the benefit of continued social contacts. This disadvantage must be offset by the individual's liking for work with crops and livestock. Undoubtedly, it will be more difficult for war veterans who have not lived on a farm to adjust themselves to farm work than to industrial work. In the Army they have become accustomed to working in groups. On a farm many jobs that can best be done by two or three must often be done by an individual working alone.

The combination of good operators with farms of adequate size and type adapted to local land conditions is essential for maximum farm prosperity. A capable operator cannot succeed with an uneconomic unit. Neither can a good farm and good land make up for deficiencies in managerial ability.

Opportunities on the Land

It is essential that public programs designed for returning war workers and veterans to normal peacetime occupations be projected on the premise that there are employment opportunities on the farm for only a limited number of persons. Occupations related to agriculture are more numerous and possibly better adapted to the needs of many who on first thought express a desire to work on the land. Actual farming and tilling of the soil is too often thought of as the chief type of activity for those interested in agriculture.

What are the possibilities of providing farms for veterans and others who wish to farm after the war? The number of farms that might become available through the normal process of retirement, death and other causes would be great if one thinks in terms of 6 million farms. However, the number is more limited when the type of farm desired is the kind that will provide the operators with full-time employment. In 1940, 3,260,000 farms, as enumerated by the census, had more than \$600 value of products sold, traded, and used in the farm household. This same 53 percent of the Nation's farms produced 89 percent of the Nation's total value of farm products. It is from this group of farms that satisfactory operating units will become available. Even some of these will not be suitable for providing a good level of living to the operator and his family. The

smallest of these, however, will be better than most of the other 47 percent on which the total value of farm products sold, traded and consumed in the household was less than \$600 in 1940. The smaller farm businesses, of course, are satisfactory as part-time units when the operator has nonfarm work or steady income from nonfarm sources. However, in 1940 only 836,000 of these low income farm operators had more than 50 days of nonfarm employment. About 2,000,000 of the low income farmers had less than 50 days of nonfarm work. Farms producing less than \$600 of products annually yet located in areas of scarce nonfarm employment do not provide satisfactory employment opportunities.

The number of full-time farm units that will become available to new operators depends upon replacements needed on the 3,260,000 farms that might be classed as full-time units. Statistics showing the length of farm operatorship are not available, but for the purpose of illustration we might assume 25 years to be about average. This should allow for the number who quit farming as well as those who die young and those who enter farming at an advanced age. About 130,000 new operators are needed annually on the basis of 25 years' average operatorship. Studies have been made which show that about half of the farmers ready for retirement due to old age have replacements within the family. If this holds true for all full-time farms, the number of units available annually for non-family transfer will be only 65,200. Postponed retirement during the war would tend to increase this figure somewhat for the first few years following the war. However, the trend toward farm enlargement due to greater utilization of labor-saving equipment may offset any increase in number of farms available through delay in retirement.

Only limited numbers of veterans and war workers can be absorbed into agriculture as new operators of full-time farms after the war. Only about 200,000 existing farms will require new operators the first three years after the war and only a portion of the new land suitable for agricultural production can be developed in that time. Programs for returning veterans and war workers to peacetime employment should reflect the limited opportunities for new farm operators and should give more emphasis to other types of rural employment.

For those who are interested in working on the land but not necessarily as farm operators, there will be many opportunities in con-

nection with public projects for soil erosion control, land improvement, and reforestation. Adequate soil erosion control will require the construction of terraces, farm dams and reservoirs, drainage and tree planting and the use of much large equipment. Land improvement will require greater use of lime and will undoubtedly result in the establishment of many local lime crushers. Many of these jobs can be done most efficiently by farmers but some are of such nature as to require the use of Government or association owned equipment and the employment of full-time workers. Planting trees on the millions of acres best adapted to that use will give employment to thousands.

Again, the present farm practice of having special jobs done through custom work will provide opportunities for people with special skills and special equipment. Some of the more important jobs of this nature are potato spraying, combining and threshing, repairing farm equipment, hauling farm products to market by truck, land clearing, sheep shearing and other jobs too numerous to mention. Having special farm jobs done through custom work increases labor efficiency on the farm and provides profitable work for persons interested in carrying on specialty work in rural areas. If the Nation is determined to give veterans assistance to enter a business of their own, it would be well to consider the possibility of making loans to establish special types of businesses as those listed above, thereby not creating too many inducement to encourage persons to enter farming where the opportunities are definitely limited.

Conclusion

There is grave danger after the war that undesirable land settlement schemes will be promoted by the well meaning as well as by those who see a chance for individual profit. Because of the limited opportunities in farming, there is a likelihood that land development and settlement projects will be proposed for many areas that are entirely unsuited for agricultural use. It is also possible that attempts will be made to divide suitable land among too many settlers, thereby creating uneconomic sized units. Prospective farmers must acquaint themselves with the requirements of successful farming. Likewise, local, State and Federal Governments and agencies must become aware of the problem and adjust their programs for the protection of prospective settlers, established

farmers, and the tax paying public. The individual citizen must think through the objectives to be strived for so that, through public opinion, he can make his influence felt in legislative as well as administrative policy.

In the development of land settlement policy the National Government might well consider the merits of using public funds for developing new lands in contrast with making incentive payments to obtain increased production from existing farms. Too often land development has been promoted by those who derive profits from such projects in ways other than farming the land. Development and settlement of new land areas tend to be over-dramatized through such catch phrases as "new agricultural empire," "sunshine and happiness," "acres of prosperity," and "the road to ownership, health, happiness, and independence." In the development of new areas those sponsoring the idea, those who are to finance the development, and the prospective farm settler should ask these questions: (1) What will be the final cost of the completed farm units? (2) What will be the expected annual farm income? If it is found that the development costs are greater than can be paid for out of expected returns from farming, the settler should not be expected to pay the difference. Ways should be found for the promoters of the project to share a greater portion of the development costs, or if the public insists on land settlement projects regardless of costs and returns, a portion of the development cost should be written off at once and paid for out of State and National treasuries. Settlement programs should be based upon facts and not emotion so that those who are to be the beneficiaries will receive actual benefits instead of shackles and future handicaps.

Financial arrangements to assist those qualified—veterans as well as others—to become established on the land will be relatively easy to work out if the basic requirements, land and settler, are economically and socially sound. A 100 percent loan to a qualified operator on a good farm is safer for both settler and the public than a 50 percent loan on a poor farm or to a settler not qualified to operate a farm. Likewise, variable payments and low rates of interest will complement a farm program based on sound principles with respect to land and operator. Variable payments and low rate of interest are not substitutes for sound basic requirements.

Local officials can do much to guide land settlement. Much has been done in recent years to zone rural areas so as to prevent settlement on land that is unsuited to agricultural use. Wisconsin is a notable example with its State enabling act and county zoning ordinances in several of the northern counties. County and other local officials can go further and actually designate the areas that are suitable for agricultural use and also recommend the type of farming and size of farms needed. The high cost of providing public services, roads and schools makes it desirable in many counties to prevent scattered settlement. A taxing district should compare the expected costs of servicing small areas and isolated settlers with the taxes that will be forthcoming from them. However, public services should not be withheld unless other positive steps such as rural zoning are taken to prevent extreme scattered settlement. Merely withholding public services and at the same time allowing uninformed individuals to settle in isolated sections of a county deprives the settler of services which would enable the children to become members of society on a par with children from other communities.

Local officials have an interest in obtaining enterprises within their taxing district that will enable the operators thereof to contribute to their share of taxes and other community costs as well as to make a good living for themselves and their families. Operators on farms that are too small or on poor land unsuited to agricultural use cannot partake of normal activities in the community. They are a poor market outlet for the merchants' products, they cannot support local institutions, and as has been shown repeatedly it is they who are the first to become delinquent in the payment of taxes. Land settlement for the purpose of getting more people on the land or for increasing local population, therefore, is not sound unless combined with sufficient basic resources to provide adequate employment and income opportunities. Development of sound land policy for the period after the war will require continued vigilance on the part of those charged with this responsibility so as to offset the expansionist and promotional forces set in motion by the over-optimistic projection into the future of temporary high prices and wartime demand.

CHANGING EMPHASES IN AGRICULTURAL PRICE CONTROL PROGRAMS*

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WHAT are agricultural prices going to do after the end of the war? Are they going to behave about the same after this war as they did after the last one—remain high for a year or two, and then crash down almost to pre-war levels in less than a year? And if so, are they going to be left to find their own levels, as they were last time? Or are we going to try to hold them up, by the provisions of the Steagall amendment, by production control programs, and other measures? If we try to hold them up, are we going to have better luck than the Federal Farm Board did in 1929–33?

The purpose of this paper is not to forecast the answers to these questions. Its purpose rather is to show the limits of probabilities one way or the other, and to outline the sort of preparations that need to be made, in order to meet whatever situation develops within those limits after the war is over.

Range of Probabilities of Post-War Price Behavior

First, Figure 1 provides some indication as to the range of probabilities of agricultural price behavior after the end of the war.

The dotted line in the upper part of Figure 1 shows how agricultural prices behaved during and after the last war. The solid line shows how they are behaving during the present war. So far, they have risen nearly 100 percent above pre-war levels; they have followed about the same course that they took last time. Are they going to continue?

Measures have been put into effect to improve the ability of the banking system to withstand depressions, and fiscal and other methods of control have been developed that may reduce booms and depressions. For those reasons, it might be expected that agricultural prices would fall less after this war than they did after the

* Journal Paper No. J-1220 of the Iowa Agricultural Experiment Station, Ames, Iowa. Project No. 894.

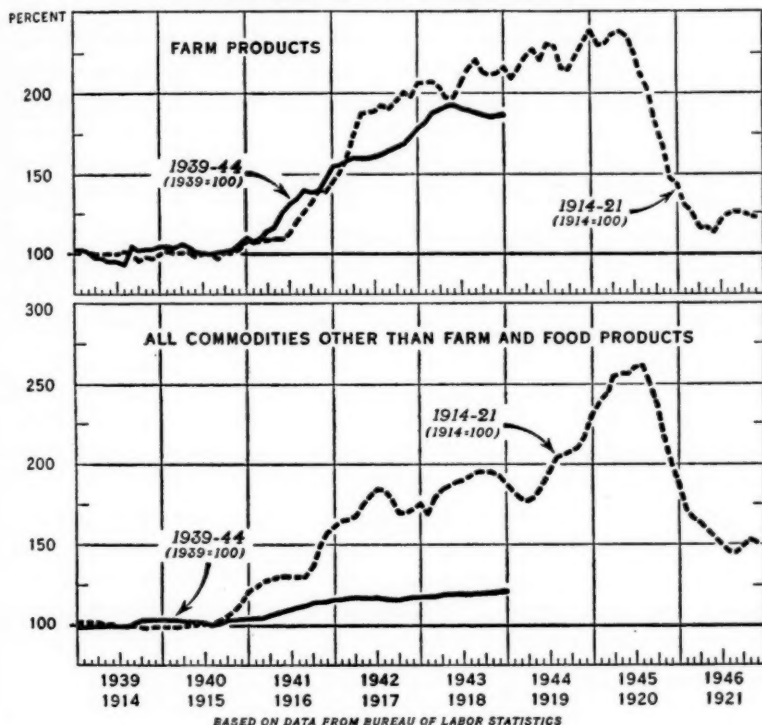
This is the last of a series of four articles by the present author on agricultural price control that has appeared in this Journal over the past two years.

I wish to thank W. H. Nicholls, K. E. Boulding, A. D. Oderkirk, R. L. Baker, and E. E. Hoyt for their criticisms as the manuscript took shape. As it approached final form, valuable criticisms were also made by F. V. Waugh, E. J. Working, F. F. Hill, and R. Patzig.

previous one. Conceivably, employment after the war could be kept at such high levels that agricultural prices would fall very little, if at all.

The bulk of the evidence, however, seems to point the other way.

WHOLESALE PRICES OF FARM PRODUCTS, AND OF ALL COMMODITIES OTHER THAN FARM AND FOOD PRODUCTS, INDEX NUMBERS, UNITED STATES, 1914-21 AND 1939-44



U. S. DEPARTMENT OF AGRICULTURE

NEG. 43280 BUREAU OF AGRICULTURAL ECONOMICS

FIG. 1. WHOLESALE PRICES OF FARM PRODUCTS, AND OF ALL COMMODITIES OTHER THAN FARM AND FOOD PRODUCTS, INDEX NUMBERS, UNITED STATES, 1914-21 AND 1939-44.

About 25 percent of the food produced in the United States is now going abroad. In all probability, the percentage under peace-time conditions will be lower than that, so there will be more food for sale in the United States than there is at present. In addition, employment in the United States is at super-high levels now—levels

that cannot be expected to continue under the best of peace-time conditions, and that in fact would have exhausting effects on our human and physical resources if they were long continued. Rationing, of course, is reducing the demand for food to some extent at the present time. But eggs are unrationed, and even in the middle of the war (as in the spring of 1944) their prices were bearing down on the egg price floor and driving the government to one desperate action after another. As a last resort, it fell back on the conversion of about 200 carloads of eggs into tankage, at a salvage value to the government of 5 cents per 30 dozen case. In their efforts to keep egg prices from breaking through the floor the eggs were originally purchased at 31.5 cents per dozen, equal to about \$9 per case, loose. The rationing of most meats (all but beef steaks and roasts) was temporarily suspended in May, 1944, yet hog prices continued for several months to run at price floor levels or lower.

Another factor of a different kind also points in the same direction. The lower part of figure 1 shows how non-agricultural prices (the prices of commodities other than farm products and foods) behaved during and after the last war, and how they are behaving this time. The figure shows that during the last war, non-agricultural prices rose almost as much as agricultural prices—nearly 100 percent. During the present war, however, they have risen only about 20 percent.¹

If all prices had risen 100 percent there would be some grounds for believing that they might all remain high after the war—although not much grounds, for agricultural prices normally rise during war and fall afterwards. But only the prices of farm products have risen that much, and they have a weight of only 17 percent in the total index of all wholesale prices. Only 17 percent of the weight in the total index has risen 100 percent. Food products have a weight of 18 percent. The prices of other commodities, with the remaining weight of 65 percent, have risen only 20 percent.

Farmers are living in an atmosphere of high prices for their products, and they are inclined to suppose that all prices are up about like theirs. If that were true, there might be some grounds for believing that agricultural prices would remain high after the war. But Figure 1 shows that agricultural prices have risen far more than other prices. The two price indexes will probably come to-

¹ This ignores the substantial decline that has taken place in the quality of many goods during the war.

gether again after the war (or cross over, as they did after the last war). And when they come together or cross over, it seems likely that most of the readjustment will be made by a marked decline in the relatively unimportant agricultural prices that have a weight of only 17 in the general index, and by only a small rise in the levels of the non-agricultural prices, with their weight of 65. It is not even certain that these non-agricultural prices will rise; they may decline too.

Thus if the reconversion to peace-time conditions is made without any post-war depression developing at all; if employment and industrial activity are maintained at about the levels existing just before the war; the probabilities are that even so, agricultural prices will decline toward the levels of non-agricultural prices. These non-agricultural prices are now only about 20 percent higher than they were before the war. If agricultural prices return to similar levels, they will not be much more than half as high as they are now. The price of hogs at Chicago in 1941 averaged \$9.45; in 1940, it averaged \$5.71. The farm price of wheat in 1941 averaged 94.5 cents; in 1940, it averaged 68.2 cents.

Existing Price Floor Legislation

Congress evidently does not intend to let agricultural prices find their own levels after this war as they did after the last war. It has passed price floor legislation designed to prevent the drastic price declines that took place after the first World War. The Steagall amendment, approved on July 1, 1941, extended price floors (previously used, in the form of non-recourse loans, only with the so-called "basic" crops, cotton, wheat, corn, tobacco, rice, and peanuts) to non-basic products, under certain conditions. It specified that "whenever the Secretary of Agriculture finds it necessary to encourage the expansion of production of any non-basic agricultural commodity" he shall support its price "through a commodity loan, purchase, or other operation" at not less than 85 percent of parity or comparable price.

The primary purpose of these floors was to stimulate an increase in the production of certain products by guaranteeing farmers a high price for them. The price floors were based upon forecasts of how high prices would be when the products reached the market. But they were more than forecasts; they were guarantees that farmers could rely upon, and base their production plans upon, ahead of time.

In the latter part of 1942, the emphasis was shifted from raising the prices of certain farm products in order to stimulate their production during wartime, to supporting farm prices or at least retarding their rate of fall after the end of the war. On October 2, 1942, Congress enacted Public Law 729, which specified that the minimum level for price floors for the products specified is to be 90 percent of parity, "during the continuance of the present war and until the expiration of the two-year period beginning with the first day of January immediately following the date upon which the President by proclamation or the Congress by concurrent resolution declares that hostilities in the present war have terminated." The legislation of December 26, 1941, extending the price supports for the "basic" crops at 85 per cent of parity up to and including the crops of 1946 is still on the books.

The non-basic products that the Secretary has obligated himself to support—the "proclamation" commodities—are:

Hogs; butter; cheese; dry skim milk; eggs; chickens (excluding broilers or chickens weighing less than 3 pounds live weight); turkeys; dry peas; dry edible beans; soybeans; flaxseed; peanuts for oil; American-Egyptian cotton; potatoes and sweet potatoes.²

Shortcomings of Existing Legislation

This legislation is defective in two or three respects: It uses too arbitrary and inflexible a formula to determine the level and the duration of the price floors, and apparently proposes to peg the prices of perishable farm products merely by fiat, without providing for that purpose any specific machinery analogous to the CCC storage operations for durable products.

An illustration will make these shortcomings clear. The price floor for hogs for the period from October 1, 1944 to March 31, 1945 is \$12.50 at Chicago. If the war in Europe ends in 1944, the resulting decrease in demand may make it necessary to announce a lower floor for hogs after the \$12.50 floor expires. The index of prices paid by farmers, which rose at the rate of about one point per month during 1942 and 1943, has remained constant since February 1944. Even if no further rise takes place before March 1945, 90 percent of parity for hogs at Chicago will be about \$11.60 by then. For the weights and grades of hogs to which price floors would be applied, it would be about \$12. Thus under the most

² The Federal Register, May 6, 1944.

favorable circumstances—no further rise in the parity index—it would be impossible to lower the price floor for hogs more than 50 cents.

It has been suggested that the index of the prices paid by farmers (changes in which determine changes in the level of parity) will decline after the war, and that this provides a useful element of flexibility in parity as a basis for price floors. This is true for the long pull. But during the first two years after the war, this flexibility is more likely to work upwards than downwards. After the last war, the index of prices paid by farmers *rose* 21 points from 1918 to 1919, and rose an additional 18 points from 1919 to 1920.³

It seems evident that the price floors must eventually be dissociated from parity, or at least from a fixed percentage of parity, and set at the level for each product that is in line with the particular situation of that product. That level can be set most accurately if the length of time for which each price floor is extended into the future is not an arbitrary 2 or 3 years (depending upon whether the war ends late or early in the calendar year) but is equal to the production period for each commodity. The floors can be set more accurately for a production period a year or so into the future than for 2 or 3 years. The last one or two years are the hardest to forecast.

Finally, specific machinery needs to be provided to implement the floors. The nature of this machinery is the subject of the next few sections.

Need for Measures to Implement Price Floors

Revision of the post-war price legislation along the lines indicated above would solve a major part of the problem of post-war agricultural price control, but not all of it.

As demand returns to peace-time levels after the war, it may be possible to maintain employment and industrial activity at a high level. If this could be accomplished, and price floors were lowered to about the peace-time levels where prices would be without floors, they would thus indirectly support prices through their influence in reducing agricultural production in line with prospective demand. In that case, the price floors would help to bring about an orderly reconversion of agriculture by preventing the extreme price fluctuations that result when an expanded supply is forced on a market with a declining demand.

³ These are the annual data. Monthly data are not available for those years.

But this is war. It is impossible to forecast accurately when the war will end, and no government engaged in a war can afford to underestimate its needs for food and fiber. It must set its price floors near the upper limits of the range of probabilities, not the lower. For this reason, the government is obligated to maintain its forward price floors that are announced during the war, if necessary, above open market price levels after the war ends, just as it is obligated when cancelling a contract with a manufacturer of tanks or airplanes to cover the costs to the manufacturer of that cancellation. The producers in both cases expanded their production in good faith, and the costs to the producer of the cancellation are a legitimate war demobilization cost, to be borne by the government like any other cost of war demobilization.

These costs in the case of farm products are the costs of sustaining the prices of farm products after the war at the price floor levels announced during the war. And since in wartime these levels have to be set conservatively high, the government is likely to have to maintain these price floors during the transition period after the war by subsidies of one sort or another, even if employment is maintained at a high level. If it should prove impossible for this high level to be maintained, and a considerable post-war recession should develop, government action programs would be all the more necessary.

What sort of programs would be required?

Organized Production Control

One measure that could be used for supporting agricultural prices after the war would be production control. Production is a concrete and tangible factor determining prices, and it lies close at home; it was used to a marked extent by industrial concerns during the severe industrial depression that began in 1929. It is not surprising, therefore, that agriculture turned to production control as a means for controlling agricultural prices in the 1930's, and it would not be surprising if production control were used again after the end of the war.

Reductions in the production of certain war commodities—soybeans and peanuts for oil, for example—will need to be made as the pattern of consumption needs returns to normal. This will be largely a shift of some acreage from these products to other products. Production control as used here refers to a different thing—

a program for the control of total agricultural production, such as was envisaged in the AAA program of the 1930's. A general production control program of this nature would have several shortcomings as a means of supporting agricultural prices after the war. For one thing, it is not certain that it would succeed.

Results of the AAA Program, 1933-40

The AAA program had rough going in spots (it was not in effect at all with wheat from 1936 to 1938) and achieved various degrees of success with different crops. Table 1 shows that from

TABLE 1. CORN, WHEAT, COTTON AND TOBACCO PRODUCTION, AND TOTAL AGRICULTURAL PRODUCTION, 1930-32 AND 1938-40

Year	Corn Production (1,000 bu.)	Wheat Production (1,000 bu.)	Cotton Production (1,000 bales)	Tobacco Production (1,000 lbs.)	Total Crop Production (1924-29=100)	Total Agricultural Production (1924-29=100)
1930	2,080,130	886,522	13,932	1,648,037	96	98
1931	2,575,927	741,540	17,097	1,565,088	104	102
1932	2,930,352	756,307	13,003	1,018,011	92	96
Average 1930-32	2,528,803	861,463	14,671	1,410,379	97	99
1938	2,548,953	919,913	11,943	1,385,573	105	103
1939	2,580,912	741,180	11,817	1,880,793	107	106
1940	2,462,320	813,305	12,566	1,462,080	107	110
Average 1938-40	2,530,662	824,799	12,109	1,576,149	106	106
Percentage change, 1930-32 to 1938-40	0	-4	-17	+12	+9	+7

Source: Agricultural Statistics, U.S.D.A., 1943.

1930-32, just before the AAA program was put into effect, to 1938-40, just before the war reversed the emphasis from reducing production to expanding production, cotton production was reduced about 17 percent; wheat production was reduced about 4 percent; corn production remained unchanged;⁴ tobacco production

⁴ The AAA reductions in acreage were more or less completely offset by higher yields. The extent to which these high yields of corn, wheat and cotton resulted from hybrid seed, improved cultural practices, fertilization, etc., and good weather,

increased 12 percent; and total crop production was greater every year from 1938 to 1940 than in 1930-32, averaging 9 percent more. Total agricultural production was 7 percent larger, and this was about the average rate of increase from 1909 to 1941. The AAA probably reduced production below what it would have been if there had been no AAA, although it is difficult to prove this one way or the other, but the size of the unsaleable storage stocks⁵ that accumulated by the early 1940's shows that in any case production was not reduced enough to support the loan rates (the loans were a form of price floor) that were legislatively forced upon the CCC.

The effects of the AAA upon total farm income appear to have been small. The statistics showing the total cash income from farm marketings compared with the income of industrial workers do not reveal any significant effect of the AAA upon farm income. One cannot tell from the income data shown in figure 2 when the AAA began to reduce production and when it stopped. All that the chart shows is that changes in demand, as measured by changes in industrial employment, are by all odds the major controlling factor determining the prices of farm products. Any effect that the AAA had upon the total supply was small.

Effects of Production Control on Farm Income

The inability of the AAA to reduce total agricultural production would be sufficient explanation why the AAA did not increase total farm income above its usual relation to the income of industrial workers. But economic analysis leads to the conclusion that the AAA would not have had much effect on total farm income even if it had succeeded in reducing production. When the production of a commodity is reduced, prices rise; but the effect of

is indicated in a study by Breimyer. (Breimyer, Harold R., "An Analysis of Crop Yields in Relation to Production Goals for Agriculture," Bureau of Agricultural Economics, Washington, D. C., July 1942. Mimeographed.) His study shows that during the period from 1937 to 1940 inclusive the weather was only about average in its effects on corn yields, and that it started below average and rose to about average in its effects on wheat yields, so that the increase in the yields of these two crops over the average yields in earlier years was due entirely to other factors than weather. But in the case of cotton, good weather increased yields about as much as fertilization did.

It may be that 1939-40 should be used for wheat, rather than 1938-40, because the AAA of 1938 was passed too late (February 1938) to affect winter wheat acreage for the 1938 crop. If 1939-40 is used instead of 1938-40, the results are similar, but show slightly smaller reduction.

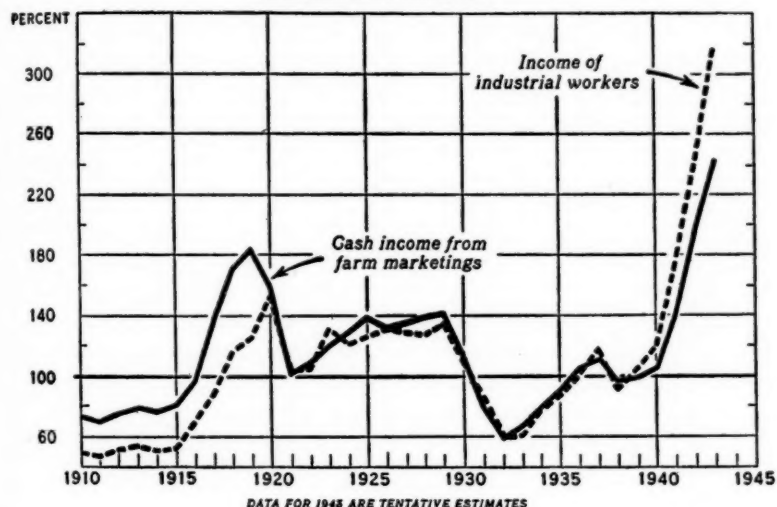
⁵ Geoffrey Shepherd, *Stabilization Operations of the Commodity Credit Corporation* this Journal, Vol. XXIV, No. 3, August, 1942.

the higher prices upon income is partly offset or more than offset by the reduction in production, according to whether the demand is less or more elastic than unity.

This applies to individual commodities and to total agricultural production. In the case of cotton, where the greatest reduction in production was accomplished by the AAA, the elasticity of the domestic demand (based upon changes in domestic production

CASH INCOME FROM FARM MARKETINGS, AND INCOME OF INDUSTRIAL WORKERS, UNITED STATES, 1910-43

INDEX NUMBERS (1935-39=100)



U. S. DEPARTMENT OF AGRICULTURE

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FIG. 2. CASH INCOME FROM FARM MARKETING AND INCOME OF INDUSTRIAL WORKERS, UNITED STATES, 1910-42.

and prices) is about -0.8 , so that even if cotton were a purely domestic product, reductions in production would have only a slight increasing effect on income.⁶ Since a substantial percentage of the cotton crop is exported, and the export demand is probably more elastic than the domestic demand, reducing United States cotton production may actually reduce cotton farm income. In the

⁶ L. D. Howell, *Cotton-Price Relationships and Outlets for American Cotton*, Bureau of Agricultural Economics, Technical Bulletin No. 755, January 1941, pp. 7-8. The elasticity of the relation between domestic prices and foreign cotton production is about -1.2 .

case of wheat, the elasticity of the demand is slightly greater than unity,⁷ so that reductions in production slightly decrease total income. In the case of corn, and also hogs, the elasticity of demand is about -0.65 ,⁸ so that the maximum increase in income that could be obtained by reducing production (to about 83 percent of average) is only about four percent. The elasticity of the demand for potatoes appears to be about -0.3 , but the elasticities for most of the other farm products appears to be in the neighborhood of unity, except for apricots and peaches, which run up to 2 or 3.⁹

Long-time demand curves are more elastic than the curves referred to above, which are based upon short-time annual fluctuations. Over a period of several years, therefore, reducing production is likely to decrease income more, or increase income less, than indicated above on the basis of short-run curves. In the case of most farm products, this means that reducing production would slightly reduce farm income rather than increase it.

The elasticities shown above are the elasticities for individual foods considered separately, when the production of other foods (other than the one being considered in each case) remains above average. The demand for food as a whole is generally believed to be less elastic than the demands for the individual foods considered separately. The partial interchangeability among foods, however, raises a question as to the accuracy of this belief. If the total production of food were reduced, and food prices rose on that account, a partial substitution of cheaper foods would be made to take the place of some of the more expensive foods. Low-income groups would probably buy less meat, butter, and eggs, and more cereals. It seems likely that total agricultural income would rise to some extent, but not as much as if "food" were a single commodity. Accordingly, reducing the production of one food would not directly increase the total income from that food, unless the

⁷ Unpublished price analysis by R. E. Post, Bureau of Agricultural Economics.

⁸ Geoffrey Shepherd, *Controlling Corn and Hog Supplies and Prices*, Bureau of Agricultural Economics, Technical Bulletin No. 826, June 1942.

⁹ Geoffrey Shepherd, *Price Discrimination for Agricultural Products*, JOURNAL OF FARM ECONOMICS, Vol. XX, No. 4, November, 1938, p. 800.

There is skepticism in some quarters as to the accuracy of the elasticities quoted above. They are used here provisionally, as being more specific than vague references to general opinions concerning the elasticities of the different products.

J. D. Black, in his *Parity, Parity, Parity*, pp. 192-214, presents an able analysis of some of the points raised here.

demand for that food were inelastic; but it would reduce the total production of food slightly, and thus increase the prices, and probably the total incomes, of all food producers to a small extent.

This probable small increase in the total incomes of all food producers is not the sort of benefit that the "basic" commodity producers had in mind when they set out to reduce the production of their commodities. Wheat farmers did not cut their acreage in order to benefit potato farmers. If wheat farmers had been successful in reducing their production, their chief benefit from their actions would have been the reduction in their variable costs of production resulting from their reduced production. Their *net* incomes would have been increased, chiefly because their variable costs would have been reduced.

It appears, therefore, that production control programs could be used to support prices by reducing production, although so far they have been only partially successful in reducing production. They would not, in any case, significantly increase total (gross) farm income nor agriculture's share of the national income; they benefit farmers chiefly through their variable cost-reducing effects on farmers' *net* income. They benefit farmers, not by increasing their total (gross) income, but by reducing variable costs. On most family farms these variable costs are small.

Growing Recognition of Demand

During the 1930's, however, very few people paid much attention to these considerations of elasticity of demand and total incomes. Most people grasped the idea that reducing production would raise prices, and that was enough; they didn't bother to look any further.

Demand was given very little attention, in spite of the fact that subsidized consumption programs—usually referred to as distribution programs¹⁰—affecting the demand have one important advantage over crop reduction programs, from the national point of view: Crop reduction, even when it succeeds, probably does not benefit farmers at all except through reducing their variable costs; yet it does harm consumers—especially low-income consumers—by forcing them to pay higher prices for less food than before. Sub-

¹⁰ The greater accuracy of the term "subsidized consumption programs" was pointed out by Don Anderson of the University of Wisconsin.

sidized consumption programs, however, benefit both producers and consumers; they benefit producers by increasing the demand for their products and therefore increasing their total and net incomes, and they benefit consumers by increasing consumption by those who need the increase most. To the extent that the recipients of the consumption subsidies eat more, other consumers eat less, and pay more for what they get, than before. This effect was comparatively small while the programs were conducted on a small scale, and would be overcome within a few years by the increased agricultural production that would result from increased farm income, if the plan were conducted on a large scale.

During the 1930's, the influence of distribution programs upon the demand for farm products was recognized only slightly. Distribution programs at first were only an incidental part of surplus disposal schemes. As the decade progressed, programs for the direct distribution of food to the needy were enlarged, the school lunch program was developed, and in 1939 the food stamp plan was put into effect. Programs for the reduction of agricultural production still held the center of the stage, but programs to subsidize consumption began to amount to something. In 1939, the AAA spent 709 million dollars;¹¹ in the same year, subsidized food and fiber consumption programs cost the Federal government 114 million dollars. By 1941, AAA payments had declined about eight percent, but Federal expenditures on subsidized consumption programs had risen to 213 million dollars.¹²

Effect of Subsidized Consumption Programs on Farm Income

There is some disagreement as to how much subsidized consumption programs increase total farm incomes. Aside from the Food Stamp Plan, which is considered in the next few paragraphs as a special case, the amounts spent by the Federal government do not represent a clear addition to the total private demand. The subsidized food displaces some food that the recipients would have purchased with their own money. Even if there were no displace-

¹¹ Agricultural Statistics, 1943, p. 745. Earl Shepard, Div. of Agricultural Finance, Bureau of Agricultural Economics, estimates that 582 million dollars of this amount was spent for production control activities, exclusive of soil conservation.

¹² Agricultural Statistics, 1943, pp. 519-21.

ment of this sort, not all the government's money gets back to the farmer; some of it stays in the distributive system.¹³

The Food Stamp Plan was designed to prevent displacement of food, by requiring that recipients maintain their previous purchases of food with their own money. It was also designed to promote the consumption of the foods that were placed on the surplus list, by the use of blue stamps that could be spent only for those "surplus" foods. In actual practice the plan did not add the full value of the blue stamps to the demand for the "surplus" foods. A considerable percentage of the recipients' previous purchases of food had consisted of "surplus" foods; the recipients bought "surplus" foods with their blue stamps, but bought somewhat less of these foods with their own money than before, purchasing other foods, and perhaps other items than food, with the money thus released. It was estimated that the net increase in food expenditures of the participants in the Food Stamp Plan was about 75 percent of the amounts spent on the plan; and it was believed that most of this got back to the farmer.¹⁴

Some analyses have indicated that because of the differences between the elasticities of the demand of the high-income and low-income groups, the Food Stamp Plan might have benefited farm income by more than the amount spent on the plan. With a given total quantity of food, if low-income consumers eat more, the rest of the consumers eat less, and pay more for what they get, than before. If their demand for food is less elastic than unity, they spent more for food than before; and most of this increase gets back to the farmer. Attempts to estimate this increase in farm income enlivened the 1938 issues of this Journal, but accurate quantitative estimates have not yet been made. In my opinion, the substitution for cheaper foods that would take place if the total quantity available to consumers were decreased would shift the consumption and production pattern within a few years in the direc-

¹³ Not the 50 percent or so that ordinarily stays there, but only the increase in the share associated with the rise in prices that would result from the additional demand for food. In the case of that part of a crop that otherwise would not be harvested at all, however, farmers and distributors divide the government's money in the same proportions as they normally divide the consumers' dollar spent for that commodity.

¹⁴ Norman Leon Gold, A. C. Hoffman, and Frederick V. Waugh, *Economic Analysis of the Food Stamp Plan*, Bureau of Agricultural Economics and the Surplus Marketing Administration, United States Department of Agriculture, p. 44.

tion of the cheaper foods to such an extent that total farm income on that score might be little if any greater than before.

The percentages of the Federal expenditures on the other distribution programs—direct distribution, the school lunch program, the penny milk plan, etc.—that got back to the farmer were probably considerably lower than the 75 per cent estimated for the Food Stamp Plan. One might make a conservative estimate, as a very rough approximation, that in the long run about half of the Federal expenditure on all distribution programs combined would get back to the farmer.

This increase in agricultural income would tend to increase agricultural production. About half of the value of this increase in agricultural production would go to farmers. It is difficult to estimate how much agricultural production would increase, and therefore difficult to estimate how great this secondary addition to agricultural income would be.

Subsidized Consumption Programs in the Future

The war had profound effects upon the subsidized consumption programs that were initiated in the 1930's. For one thing, the war terminated the Food Stamp Program. The program had been a dual-purpose plan, designed to get rid of agricultural surpluses and to improve the nutrition of relief recipients. As war came, surpluses vanished and surplus removal programs became anomalous. In addition, unemployment declined, so that the need for the plan from the nutritional point of view also decreased. Some attempt was made to continue the Food Stamp Plan in order to alleviate the effects of rising food prices on low-income families, but the attempt was unsuccessful. The program was terminated on March 31, 1943. The direct distribution programs were continued, but on a reduced scale.

The long-time effects of the war, however, are likely to lead to an expansion of distribution programs rather than to a contraction. The war has made the United States and other nations more nutrition-conscious than they were before. Rejections for the draft have been high, and a considerable percentage of the rejections were made for defects caused by poor nutrition. In addition, the scarcity of food relative to demand during the war has made everyone more conscious of nutritional needs.

Many nutritionists and economists believe that nutritional de-

iciencies in the United States are widespread. The statement has been made by responsible authority that even in January 1944, when employment and national income stood at record levels, one-fourth of the civilians in the United States were under-nourished.¹⁵ In ordinary times the proportion is considerably higher than this. "All the evidence from numerous surveys over the past 10 years to the present among persons of all ages in many localities is without exception in complete agreement that inadequate diets are wide-

DISTRIBUTION OF FAMILIES AND SINGLE CONSUMERS BY MONEY INCOME LEVEL, 1942*

	All families and single consumers		Families		Single Consumers	
	Number (Thousands)	%	Number (Thousands)	%	Number (Thousands)	%
Under \$ 500	3,488	8.5	2,319	6.9	1,169	14.9
\$ 500-\$1,000	6,652	16.1	4,604	13.8	2,048	26.1
\$1,000-\$1,500	6,601	16.0	4,837	14.5	1,764	22.5
\$1,500-\$2,000	6,008	14.5	4,920	14.8	1,088	13.8

* Estimates cover all civilian consumers except those living in institutions. The year is the calendar year.

Office of Price Administration, Division of Research, Consumer Income and Demand Branch. Civilian spending and saving, 1941 and 1942, p. 16, table #5. (Mimeographed) Washington, D. C., 1943.

spread in the Nation. Although an appreciable percentage of the diets failing to meet the council's recommended dietary allowances were more than 50 percent deficient in amounts of the several essential nutrients, most of the diets were less than 50 percent deficient. Accordingly, there is widespread prevalence of moderately deficient diets."¹⁶

Even with reasonably full employment, such as existed in 1942, 8.5 percent of the families and individuals in the United States had incomes of less than \$500, and 24.6 percent had incomes of less than \$1,000. Families with annual incomes below \$500 spent only \$77.80 per person on food. Families with incomes between \$500 and \$1,000 spent only \$104.27. Dietary deficiencies in some foods of about 50 percent are found in these groups.¹⁷ It is clear that even in

¹⁵ Statement by H. R. Tolley, Chief, Bureau of Agricultural Economics, U.S.D.A., National Food Allotment Plan, Senate Hearings on S.1331, January 1944, p. 45.

¹⁶ National Research Council, *Inadequate Diets and Nutritional Deficiencies in the United States*, Bulletin 109, November 1943, p. 46.

¹⁷ Tolley, *op. cit.*, pp. 47-48.

1941 many families in the low income groups were not properly fed. If a post-war depression of even moderate severity should develop after the war, a nutritional problem of major importance would arise.

Nutritionists, medical authorities, and food economists, are not in complete agreement concerning the extent of malnutrition in the United States.¹⁸ It is hoped that further research will reconcile these differences one way or the other in the future. Meanwhile, the evidence indicates that malnutrition is extensive enough to warrant serious consideration, and that inadequate income and incomplete knowledge of nutrition are the two chief reasons why malnutrition exists.

Need to Focus Attention on Demand

In this situation it seems clear that more attention will need to be focussed in the future upon the demand for farm products. Even if employment can be maintained at high levels after the war, programs for subsidized consumption and consumer education will be required, on the scale indicated by the table above. And if employment and demand should decline substantially after the war, the numbers of low income consumers subject to nutritional deficiencies would expand rapidly. Reducing production and storing large quantities of food out of reach would not be sensible methods for meeting that situation. The way to meet a decline in demand is to offset it as fully as possible by Federal measures acting directly on the demand. Several different measures of this sort may be considered.

1. The Federal government could offset the decline in demand by subsidizing consumption straight across the board. It could simply advise processors to cut the prices of their products to consumers enough to keep all the product moving into consumption, and guarantee to pay the processors whatever subsidy was necessary to fill the gap between the floor prices paid to farmers and the prices they received from consumers. This would be an extension of the method

¹⁸ The literature is voluminous. A few items of particular interest to agricultural economists are listed here.

A. E. Taylor, *Why Enrichment of Flour?* Wheat Studies, Food Research Institute, Stanford University, California, March 1941, pp. 77-108.

Hazel K. Stiebeling, Ph.D., *Adequacy of American Diets*, Am. Med. Assn. 535 N. Dearborn Street, Chicago, 10. Handbook of Nutrition, 1943, pp. 403-24.

M. K. Bennet, *Essential Food Requirements in Wartime*, JOURNAL OF FARM ECONOMICS, Vol. XXV, No. 4, pp. 835-847, and a reply by William Kling, *In Defense of an Adequate Diet*, in the following issue of the same JOURNAL, pp. 379-381.

that is being followed during the war to enable meat and butter prices at retail to be rolled back to lower levels without lowering livestock and butterfat prices paid to farmers. If this method were used to meet a decline in demand after the war, the existing subsidy of \$1.10 per 100 pounds for beef cattle, for example, would be increased to \$2 or \$3 or whatever was necessary to keep the product moving into consumption.

The shortcoming of this sort of subsidy is that it runs into large sums of money which would be inefficiently used. The average live weight of cattle and calves slaughtered per year in the United States is about 15 billion pounds. A subsidy of \$2 per 100 pounds on that quantity would amount to 300 million dollars; a subsidy of \$3 would amount to 450 million. Similar subsidies on other products would add up to several billion dollars. Subsidies of this kind would constitute an inefficient and wasteful use of public funds, since they would benefit all consumers alike—the rich who would not need them, as well as the poor.

2. Export subsidies could be paid, in an effort to force enough commodities into export channels to create scarcity on the domestic market. The shortcomings of this policy are obvious. It offers goods at bargain prices to consumers in foreign countries at the expense of consumers in our own country. Why should we treat other countries' consumers so much better than our own? Protests arose in Congress whenever it appeared that the United States was lend-leasing any food to any ally whose per capita consumption of that food was greater than ours. During peace time, export subsidies should arouse no similar sentiments. In addition, export subsidies antagonize foreign countries, as shown by the anti-dumping tariffs and other restrictions that they raise against our products. To the extent that these foreign barriers offset our subsidies, our subsidies accomplish nothing at all, except to pipe money directly out of our Treasury into theirs.

3. A more efficient procedure for supporting price floors after the war would be for the Federal government to buy farm products and distribute them either directly, or through ordinary retail channels by means of food stamps, or both, to those consumers who need them most—to low income groups who otherwise would not get an adequate diet.

Even with full employment in the United States such as existed in 1943, it was estimated that some degree of malnutrition existed

in one-fourth of the population. Obviously, if a depression of even moderate severity developed after the war, the proportion suffering from malnutrition would increase substantially. A nutritional program designed to bring low-income consumers' diets up to par would subsidize the consumption only of those who needed it, rather than subsidizing consumption by rich and poor alike, and would help to maintain the prices of farm products as well.

A program of this sort would require less money than a subsidy straight across the board, and would get more food to those who needed it most. It would put a floor under consumers' nutrition as well as under farmers' prices. It would involve more extensive and complicated administration than a general subsidy to all consumers of the product referred to above, but the job was done on a small scale in the late 1930's, and it could be done on a larger scale in the future.

It is essential that a program of this sort be now initiated while employment runs at a high level, in order to deal with malnutrition as a continuous problem, and in order to be ready to expand rapidly if employment declines. This expansion would take place automatically as unemployment reduced incomes and threw more people below the minimum income level set for eligibility for participation in the plan.

4. A question would then arise: Why should the nation provide its low income groups only with food, when shelter, medical care and other needs might be equally urgent? Why not provide cash to cover all these needs, rather than just stamps that could be spent only for food?

The orange stamp requirement was designed to compel participants to spend as much for food as before, and therefore not to spend more for other things or services than before, and to increase their consumption of food up to 50 percent. A course at the opposite extreme from this would be to give the recipient complete freedom of expenditure, by giving him the most liquid form of assistance, namely money. That was the course followed by the relief program. A shortcoming of this course was the possibility that the recipient might not spend the money wisely from a nutritional point of view. His family might continue to be poorly fed.

A sensible middle course would lie between these two extremes. It would abolish the orange stamp requirement, and simply issue

food stamps in large enough quantities per recipient to ensure that the recipient could purchase a nutritionally adequate diet. If there were general agreement that participants in the program would not know enough about nutrition to spend their food money for the right kinds of food (that would provide an adequate diet) lists of the most suitable foods in the different regions at different times of the year could be provided with the food stamps or posted in stores. Or if this advisory information were not enough to do the job, the bulk of the stamps could be issued as specific commodity stamps, constituting a sort of nutritional market basket designed to take care of the basic nutritional requirements. Flexibility to provide for differences in individual tastes could be provided by grouping certain items, much as they are grouped under red points and blue points under rationing today.

Under a program of this sort, the government would at least be sure that low-income consumers' nutritional needs would be taken care of. Food is not the only need, but it is one of the most fundamental ones, and ought to be given a high priority. When a man earns all his income, the government does not have much concern about how he spends it. But when the government contributes income to meet basic needs, it has legitimate grounds for insisting that the income be spent for nutritional essentials.

Whatever income the recipient had previously been spending for food would then be freed for other purposes—clothing, medical care, shelter, etc. These other purposes might include some wasteful items, but at least the family would be properly fed, first. Additional programs providing adequate shelter and medical care could come next on the priority list.

Relation to High-Employment Policy

Programs of the sort outlined above would supplement general programs designed to keep the entire economy operating at a high level of employment and income. One of the methods of heading off or retarding a depression is government spending. To be most effective, this spending should place additional purchasing power in the hands of people who will spend it, not save it. The government money spent on the programs outlined above would practically all be spent at once. This constitutes another advantage of the low-income consumption subsidy program over the general consumption subsidy program going to rich and poor alike.

The most sensible program of all is for the Federal government to provide low income or unemployed families cash for their needs, not as a dole or gift, but as wages for useful public or private work, for example, on superhighway construction, housing projects, reclamation, power, conservation, and recreational programs, and so forth. This would take care of other needs as well as nutritional needs. It is not only the best method from the point of view of the recipient; in addition, it improves the nations' productive and recreational plant.

If this construction program were extended to all who were able and willing to work, it would reduce the scope of the low-income consumption subsidy program merely to those who were not able or willing to work, or who could not earn enough to buy an adequate diet for their families. Tying this program in with the United States Employment Service would make it possible to restrict the program to those who were unable to work; those who were able but unwilling would be disqualified from participation. If, however, unemployment were high and the construction program were carried through on only a limited scale, more of a load would be thrown on the low-income and other consumption subsidy program.¹⁹

Distribution Problems

Some of the problems that need to be worked out in advance of the adoption of any or all of these consumption subsidy programs have been indicated above. A good deal already has been accomplished along these lines, but much still remains to be done. The problems may be set out in schematic form as follows:

1. How extensive are nutritional deficiencies in the United States, and what quantities and qualities of what foods would be required to remedy them:

- (a) under conditions of full employment?
- (b) under various degrees of unemployment?

To what extent are the deficiencies qualitative rather than quanti-

¹⁹ It was estimated in 1940 that a national nutritional program designed to provide adequate diets for all relief families and all employed low-income families (defined as families with incomes of less than \$1,000 per year) in the United States would cost about a billion dollars a year.

That figure was based upon conditions as they were in 1940. The figure would be smaller than a billion dollars in years of prosperity, and larger in years of depression, varying directly with the number of people on relief, unemployed, and only partly employed. (*Economic Analysis of the Food Stamp Plan*, A Special Report by the Bureau of Agricultural Economics and the Surplus Marketing Administration, U. S. Department of Agriculture, October 1940.)

tative? To put it in plain English, to what extent do low income groups need, not more food but only more of some foods and less of others? To that extent, a nutritional program would support the prices of those foods which consumers needed in larger quantities, but would not support the foods which consumers needed in smaller quantities. This would need to be taken into account in planning the price floor levels and production goals for the different products.

Decisions would also need to be made concerning the form in which nutritional deficiencies could best be remedied. What is the least expensive form in which vitamin A, etc., can be provided, and how important an item, nutritionally, is taste? Could the elements in milk be provided at less cost by fortifying bread with dry milk solids than by providing more fluid milk?

2. What are the alternative distributive methods for remedying nutritional deficiencies, adapted to different situations? To provide low income groups with

- (a) cash (in this case, should the cash be provided as a gift, or as wages for useful work?)
- (b) food stamps, or
- (c) food, by direct distribution?

What are the relative costs, advantages, and disadvantages of these alternative programs? To what extent are the plans complementary, or exclusive?

3. These plans were in effect on a small scale before the war. What changes need to be made in any or all of them to fit them to post-war needs?
4. What should be the minimum income or other standard below which a family would become eligible for nutritional aid, and how can the problem of certification best be handled?
5. To what extent are other factors than low income responsible for inadequate diets? How much and what kind of nutritional educational work would be required?

A good deal of experience has been gained in the handling of distribution programs before the war. It needs to be brought together and applied to the problems outlined above, in advance of the problems materializing after the war.

Program Procedure

A food program of this sort could extend and amplify the program that is in effect now during wartime. A committee analogous to the present Food Requirements and Allocations Control Committee could estimate the quantities of food that would be demanded under the conditions of employment anticipated, plus whatever Federal subsidization was planned, at prices that would induce the production of those quantities.

The next step then would be to translate these estimated needs into physical production goals for agriculture, such as those that were first worked out for 1942. These goals constitute physical objectives in quantitative terms, and disagreements concerning them can be settled on a definite objective basis.

Once these physical quantities have been agreed upon, the prices that are needed to call forth that production can be determined in the light of the reaction of producers to various prices in the past, with proper adjustment for prospective changes in supply conditions. These estimated "necessary prices," to use J. D. Black's term, could be worked out by much the same procedure as that by which the "Outlook" reports upon prospective prices are prepared. Impartial experts could be called in from all over the country, and their views pooled with those of the economists in the Department of Agriculture.

When the prices for each product are finally worked out, they could be published along with the physical production goals as the prices estimated to be necessary to induce the production of the quantities of the different products specified in the goals, and to permit all of this quantity to move into consumption. These prices would represent economic bench marks that would constitute at least a definite basis for arguments about the levels at which the forward price floors should be set. The onus of proof would rest upon those who wanted higher or lower prices than these.

The program would be primarily a nutritional program. It would have taken into account the nutritional needs of the population, and the subsidies to low-income groups that would permit them to purchase approximately the quantities of food required to meet their nutritional needs. The price floors would be set at the levels that it was estimated would induce the production of the different agricultural commodities in the proportions desired.

The price floors for the perishable products would have to be set at levels that would permit all of the perishable products to move into consumption without delay, for perishable products cannot be stored. The loan rates for the durable products could then be figured backward from the price floors that were established for the perishable products. The loan rate for corn, for example, could be set at the level that would call forth the desired production of corn and also result in the hog-corn ratio that would induce the desired production of hogs. The loan rates for other feeds could be handled

similarly. The loan rate for cotton has eventually to be set in line with world prices.

After the price floors had been announced each year, the accidents of fortune would affect the conditions of demand and supply that would exist by the time the products reached the market. If the weather were good and crop yields were high, the excess over average yields would not depress prices, in the case of a durable product like corn, for that excess would move into governmental storage and be removed from the market. If the weather were poor and yields were low, prices would rise only to a small extent before they would pull supplies out of the government storage stocks, and this would prevent prices rising further.

In the case of corn, primarily a raw material for livestock, stable loan rates, providing a stable price level, are required in order to stabilize the supplies and prices of livestock. But in the case of wheat, the bulk of which is sold as cash grain, stable loan rates unstabilize wheat growers' incomes. They cause them to fluctuate directly and proportionally with the size of the crop. Varying loan rates would be preferable with wheat—rates that varied inversely and proportionally with variations in the average yield per acre of wheat in the United States from year to year. This would not only stabilize wheat growers' incomes but facilitate the movement of large crops into consumption with a minimum of storage costs.²⁰ The same thing is true of cotton and other cash crops. Thus for most crops, "the" price floor announced in advance of seeding or breeding would be a schedule of floors ranging upward and downward from the central floor for average yields, like the loan rate schedule for corn in the Agricultural Adjustment Act of 1938 (perhaps the schedules should range only downward from average yields, as the corn schedule did).

Excessive or deficient supplies of perishable products could be taken care of (1) partly by their lower and higher prices stimulating or reducing their consumption, and stabilizing total returns rather than prices to growers, (2) partly by the private trade featuring these products, and (3) partly by those government programs which were able to do so, expanding their distribution of the plentiful commodities at the expense of others with similar nutritional characteristics but in less abundant supply. This would be the extent

²⁰ Geoffrey Shepherd. The coordination of wheat and corn price policies. Iowa Agr. Exp. Sta. Res. Bul. 330. June 1944.

to which the nutritional program would also be a "surplus removal" program.

If the private (non-governmental) demand turned out to be somewhat stronger than anticipated, employment would rise and the numbers of people receiving food from the government (either directly or through food stamps, or both) would decline. This decline in governmental demand would offset part of the increase in private demand, but prices would be somewhat higher than anticipated. If the private demand weakened, employment would fall and the numbers of people receiving food stamps would rise. This increase in governmental demand would offset part of the decrease in private demand, and the prices of farm products would fall only moderately. Thus the program would automatically reduce fluctuations in agricultural prices.

It seems evident that the difficulties involved in administering the program would be greatly reduced if the price floors for farm products were set slightly below the price levels anticipated—say 10 or 15 percent. Declines in demand would then have less troublesome consequences for the program than if the floors were set high. Farmers would probably be willing to accept a program that removed 85 to 90 percent of the uncertainty about prices, without demanding 100 percent removal.

Price Floor Program Needs Revision

The subsidized consumption part of this program should be put into effect at once, for reasons given above. The price floor part of the program, however, is a more complicated matter. It is already in effect for the "basic" and "proclamation" commodities, and for other commodities which bring the total up to about 40 commodities. The floors for the "basic" and "proclamation" commodities are extended, under the Steagall amendment, for two calendar years after the end of the war, at 90 percent of parity (85 percent for livestock feeds).

The problem with these "basic" and "proclamation" commodities is not how to grasp the bear by the tail, but how to let go of it. The difficulty is that these price programs are being handled as price support programs. But prices cannot be supported simply by announcement. They can be supported only by measures affecting the supply or the demand. The experience with AAA control of production has shown how unlikely it is that total agricultural

production can be significantly affected. Control of demand by subsidizing consumption on a nutritional basis, along the lines indicated above, looks more promising and would benefit both consumers and producers, but it has not yet been put into effect on a substantial scale; the food stamp plan in fact has been suspended. Price control by fiat cannot go beyond the limits set by the effectiveness of accompanying measures affecting the supply and the demand, without inviting disaster.

In the case of durable products, the disaster can be postponed by storage operations, and if proper measures are taken during the postponement period, may thus be averted. After the war is over, it may be possible to "hold the line" with durable products until the commitments in the Steagall amendment have expired. But in the case of perishable products, the nation is taking a huge gamble on the strength of the post-war demand. The Federal Farm Board lost that gamble, and the Commodity Credit Corporation won it; but conditions after this war are likely to resemble those of 1929-33 rather than those of 1933-44. The Steagall amendment needs to be revised to bring its commitments within its powers. Price control programs need to be handled realistically, by setting price floors where prospective supply and demand conditions permit, not by setting them at levels dictated by political pressures. If the price floors are not set in line with economic realities, the resulting difficulties are likely to be so severe as to discredit all agricultural price programs.

There is a possibility that the nation will learn to handle these programs by experience, in time to avoid running them into the ground. It may not listen to economists' arguments, but it will have to listen eventually to a billion or more bushels of corn piled up in storage, or to 15 million bales of cotton, if that much is needed to drive the lesson home. Where the length of the storage period is greater than the length of the loan or price commitment, there is enough time for readjustment to head off the loss of any of the physical commodity. But that is not true of perishable products; they must be disposed of at the price floor announced before the beginning of their production period; and if that price floor is not set in the first place at the level at which all the product will move into consumption before it spoils, food will be wasted and the whole program will be endangered.

The emphasis with these price control programs needs to be

shifted from setting the price first and taking a chance on whether the supply and demand will be such as to permit the commitment to be carried out. The program should forecast the supply and demand first, affecting them by government programs as much as may be desirable and possible, and then set the price floor that will induce the quantity of production that can be moved into consumption at that price.

Domestic distribution programs, handled in this manner, could go a long way toward remedying the twin afflictions of inadequate diets for low-income consumers and inadequate incomes for farmers during periods of less than full employment. The contribution made by these programs would vary automatically with variations in the needs of both of these groups. When general employment and income was high, low-income consumers and agricultural producers would need only a minimum of aid; the benefits of the program then would be quantitatively small, because the numbers of consumers whose incomes fell below the minimum dietary level would be small. But when general employment and income declined, the numbers of consumers with incomes below the minimum dietary level would increase, and this would automatically increase the scope of the plan. If a depression of considerable severity developed, millions of consumers would come under the plan. Their consumption would be maintained, and agricultural prices would fall only moderately. A severe depression might make it necessary to spend one, two, or three billion dollars on the plan. This would be money well spent. It would avert malnutrition among low-income consumers, provide very substantial support to agricultural prices and incomes, and promote recovery from the depression. Here is a clear case where otherwise diverse group and national interests could be made to coincide.

FARM MANAGEMENT RESEARCH NEEDS IN NEW ENGLAND*

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THE NEEDS for research in farm management in New England are probably little different in general outline from those of the rest of the country. The simple fact of the matter is that during the years of the great depression in the thirties, and up to the onset of the war, farm management research in many places has been pretty much at a standstill. The energies of the researchers in this field have been absorbed merely in keeping up with the developments under the AAA, SCS, FSA and other programs and trying to see what they were doing to agriculture. The war with its production goal programs, price supports and ceilings, and labor shortages, has cast the researchers still more in the role of observers.

But as the war ends, the agriculture of this country will be faced by the need for adjustments more far-reaching than in any other few years in its history. It is high time, therefore, that research in farm organization and related subjects shift quickly from the passive to the aggressive. This paper presents the results of some thinking along these lines mainly in terms of the concrete situations in New England.

Aggressive Management

Perhaps as good a way as any to focus thinking on these general problems is to ask ourselves whether New England dairy, poultry and truck farms are going to be able to compete successfully with those of other areas under the new technologies that are developing. This kind of question cannot be answered in terms of the average of all types and conditions of farmers. Instead we should begin research plans in farm organization on the basis of good men on good dairy farms—with reasonably able men operating farms that represent fair opportunities at least. Research designed to lay the foundation for reorganization of farms that will survive the terrific impacts ahead must not only be bold in its concept but also imaginative in its approach. Such research may enable the progressive operator to make necessary adjustments. The plans can then be

* This paper was read at the 1944 Annual Meeting of the New England Research Council on Food and Agriculture.

scaled down and modified for the benefit of other operators insofar as they will cooperate. This scaling down and fitting of the material to cases in typical groups is part of research. Research is not complete until it has been carried to the point of testing.

The dairymen of New England, it often seems, even those with sizeable herds, have not yet completed the transition from self-sufficing to commercial agriculture, because they have come up through a system of defensive or rear-guard farming. They cut the hay that happens to be in the field and have no program of implementing larger yields of better hay. Their first step in reorganization is the adoption of aggressive management.

The chief differences in results between aggressively operated farms and other farms in New England appear in the cumulative effects on yields and the quality of roughage. These yields depend upon *long time land management* as well as upon the type of soil. As most dairy farms can be organized for efficient production only on the basis of good yields, the yield of roughage in fields and pasture is an important and critical factor in their economy.

If farm management research is going to be of service to such a program of aggressive management, we need to know the annual quantitative costs and returns involved in the various degrees of management. These differences in management involve the use of available resources, such as the operator's labor, his equipment and power, cash expenditures for such items as seed and supplies, and also the factor of time or waiting. We need to marshal these data and direct the analysis to determine the cumulative outlays and returns over a period of years and to analyze these annual data from the standpoint of utilization of the available resources of the actual farms. In other words, assuming an operating farm with its equipment and labor in 1944, we need to determine what outlays, returns and net income are involved, over the next decade, in an aggressive cropping program as compared to a drifting program. This is a difficult type of analysis and perhaps the results should be stated in approximate terms. For example, we cannot know with precision the relationships between types of management and accumulated increases or decreases in yields. Nevertheless, we must have some data of this sort if we are to make any realistic plans.

To illustrate: a certain Mr. Noyes operated a small dairy farm near Lisbon, New Hampshire, for over 50 years. During this long

period he carried on a definite aggressive cropping plan, each year plowing under one-fourth of his tillage land, which was a heavy legume sod. He used some lime but very little fertilizer. Toward the end, he averaged about four tons of hay per acre. Over this long period he had invested some of his labor and use of equipment and cash for seed and thus had secured the advantage of yields double those of neighboring farmers. If we are to help farmers plan their farms, we must know whether such a type of management as that followed by Mr. Noyes commonly results in 4, or 3, tons of hay per acre on this type of land, and whether another type results in $1\frac{1}{2}$ tons per acre or some other figure.

We then need to follow through the effects of good yields of high quality hay and pasturage and see what they mean in the livestock economy of the farm. One operator practicing this type of management this past year secured an average production per cow of 13,000 pounds of milk and 455 pounds of fat with a grain ratio of one pound of grain to 10 pounds of milk. This farmer made heavy and expensive applications of fertilizer over a period of years. Did this rate of application pay him best? To answer such a question, we need input-output data with varying fertilizer and varying management inputs in terms of long-time results. Actually, this man made heavy applications of fertilizer and nothing else for a number of years. The results were not spectacular until he settled down to an intensive system of land and livestock management to go with it. It may well be that once the land is built up to a high level of fertility, yields can be maintained with less management. The conditions by then may become generally favorable for certain perennial legume plants.

We must recognize, however, that not all farmers will practice this kind of intensive management. We know that not all the operators even on good farms are interested in agricultural progress. Some of them are old, some are limited in ability and skill, others lack financial resources, and a few are merely drifting aimlessly along. Even those that are desirous of developing their farm businesses are handicapped by lack of capital and resources, and also by a lack of what may be called management itself. Investments in these require time, but once the land capacity has been raised to a high level, the farmer has a continuing advantage and can maintain a better farm organization.

Steps in Reorganization Analysis

Every major change in technology or practice adopted by the operator may require a shift in farm organization in order to use the available resources to the best advantage and to maximize the returns. A reduction in labor requirements on one crop may result in a realignment of the proportion of the various crops and perhaps will enable the operator to cultivate additional tillage land to advantage. Thus, with new types of equipment in use and new developments on the way, we need to study the performance of equipment under varying conditions such as yield, size of crew, and topography. But this is only the first step. The possibility of improved performance should be projected and tested. In some cases time and motion studies of the labor practices should accompany the study of enterprises. The use of supplementary equipment should be studied and the possibility of new types, new practices, and better methods of use should be explored. The possibilities of these new machines should be projected with imagination and with a disregard for the customs and habits of the past. These suggested improvements can be tested out experimentally and if found workable can be further checked on a farm in cooperation with the operator.

The first step in the needed research should therefore be followed through with the operation of equipment and of labor, one practice at a time, projecting improved procedures where possible, and eliminating the bottlenecks to efficient production. The data resulting should be arranged for the convenience of further research. The acres and tons that can be harvested by varying sized crews with several types of equipment would be useful data. These data would represent the accomplishments to be expected when men have been trained to carry out improved practices, and the records would indicate an efficiency well above the present average. There are such wide differences in accomplishment on New England farms and such a wide gap between conditions of the present and of the postwar era, that such average figures could not be applied directly in planning the organization of most individual farms.

A few years ago, several New England stations made attempts to approach this problem through general studies of several farms. These projects have been useful and have shown the nature of the problems that are involved in reorganizing farms. However, they

did not get the results expected. We now need to start at the other end and build improved practices for each enterprise and weld them together into the best possible organization. We need to analyze our data from the standpoint of the most advantageous equipment and practices for several typical groups of farms. These farm setups will in effect constitute "pilot" farms. The data of these pilot farms can be used in budget analyses to indicate the most advantageous combination of crops and the acreages that can be handled under various sets of conditions.

Most New England farms are limited in acreage of tillage. The possibilities of use of new machines and new methods may need to be explored in terms of larger acreages than now within the confines of a definite farm. The data obtained will not only be acres or tons per day, but acres or tons per season. I realize that some people are afraid of such a "synthetic" approach. I am interested in its application to the setting up of an hypothesis—one not picked out of thin air, but an hypothesis that is projected from a series of actual single practice studies. This is the practical way of bringing imagination and boldness into play. The hypothesis can be checked and rechecked on paper and each single practice can be tested experimentally under actual farm conditions. Then the combination can be checked with practical farmers and finally the revised hypothesis can be given a real test on a farm in cooperation with a progressive farmer. If this plan which is designed for a good man on a good farm is found workable, it can be modified for less favorable situations. In other words, hypotheses would be formed for other types of farmers and other types of farms.

Application to Chore Work

Although chore practices on dairy farms have not changed much for many years, we are on the way to revolutionary departures in them. The possibility and extent of the reorganization of dairy farms depends to a considerable extent on the adoption of these improved chore practices.

We can, of course, as a matter of routine research procedure, note the present methods in each chore practice, suggest changes and observe the results. But the greatest long-run progress will come from the use of the data and observations only as background for synthetic analysis of the combined chore tasks in which each practice is

planned on paper experimentally without reference or limitation to any one factor. The suggested changes can be checked by trial in the present barns, but the full analysis requires that they be considered in association with the improved design of barns. Each proposed practice must remain an hypothesis until it is found either workable or unworkable. A few progressive dairymen if imaginative as well as practical can cooperate by studying and checking the hypothesis. The final test may require a pilot farm in which the possibilities of efficient production are explored as if we were starting from scratch.

In a milking study handled in this way, we developed the preliminary hypothesis that 2 men with 3 single units could milk cows at the rate of 1 cow per minute or 60 cows per hour. We realized that this might require some selection of cows as to ease of let-down, improvements in barn arrangement, and the building of special milk handling equipment. Later, we noted that the Wisconsin Experiment Station had already equaled this rate of milking: two men with three single units are milking 100 cows at the rate of 60 cows per hour.

A herd of 60 milking cows plus eight dry cows requires in winter the daily distribution of approximately 500 pounds of grain, 800 pounds of hay and a ton of silage, the movement of approximately 2 tons of manure and 300 pounds of bedding, and the handling of 1500 pounds of milk. In the pasture season an average of 250 pounds of grain, 200 pounds of manure and 1500 pounds of milk is handled daily. The method of doing this combined job can be vastly improved.

When all the practices have been thoroughly tested and the adaptations of the men completed, two men may be able to handle sizeable herds, and with some help at peak harvest periods, also produce the roughage needed. At this stage, we do not know in New England what organization is possible on the basis of reasonable hours and reasonable activity of two average skilled men. The competition with other areas that confronts New England makes it highly necessary that we go through the steps outlined, study present practices, project and test out improvements, form hypotheses of possible combinations as related to one man or two men, and then check these hypotheses carefully and finally give them a fair trial. Little provision has been made for such research at present, but

we can make a beginning and perhaps find some way to test out our practice in cooperation with individual farmers.

It is to be expected that the full use of such plans, even when scaled down and modified, will require adjustments and additional investments such as the remodeling of barns, or the tiling of wet spots in fields that hinder the use of modern equipment. The need for these investments before the farm organization can be completed raises the question of what farms are worth continuing as commercial farms. We can learn about this by applying our results to various types and conditions of farms until we have built up experience upon which to base judgments.

Pasture Analysis

Among the six New England States, we have considerable data from pasture plot studies and demonstrations on small areas of improved farm pasture. This information should give us sufficient basis for forming hypotheses as to needed revisions in farm organizations. A few farmers have already made a good deal of headway in building pastures, but we need to go further and reach out to other sets of conditions. Pasture improvement analysis is not complete *until applied to the farm organization as a whole*. Pasture improvement will often raise the volume of milk as to make possible the profitable operation of farms now in danger of going out of production. On the other hand, the pasture program must be related to the number of cows that one or two men can handle.

As a contribution to immediate postwar planning, a research project might explore the problems involved in improving needed permanent pasture in a sample town. How much pasture land should be improved? How much clearing is involved? How much leveling can be done profitably? How much lime and superphosphate will be needed to bring the pasture up to high capacity?

As examples of other practices or problems in organization that need handling in a similar way, may be listed the following:

(a) *Grass silage*

The ensilage of grass crops has become popular in some areas in recent years, but we do not know too much about the relationship of this practice to the farm as a whole. We need to know more about the inputs and the returns. Then, using the method mentioned earlier, we can make some estimates of the combination of

acres of corn silage, grass silage, and hay that could be grown to best advantage on several typical groups of farms.

(b) *Custom work*

There has been so little custom work and organized exchange of labor in New England that rates and procedures have not become established, and this lack of definite practice hinders its development. For the purpose of suggesting results we need to study the costs associated with the use of all the new equipment which may be expected to be in use in the state. The successful institution of custom work will have an important bearing on farm organization, because the operator will have more time for other production work. By helping to build up a satisfactory and workable relationship between owners of machinery and their neighbors, the researcher may make an important contribution to agricultural areas.

(c) *Farm forestry*

Most foresters agree that it is desirable for the dairy farmer to do some logging on his own farm each winter. At least, the milling situation in some areas makes it possible for him to do so. We must make it easier for him to do so by working out special logging practices and equipment. One-man and two-men farm crews who have only a few hours available a day may not follow regular lumbering procedures. There is an advantage in using resources in the slack winter period in getting out a few logs, yet many farmers will not start unless the process is simplified.

(d) *Commercial market egg farms*

The commercial poultrymen have made considerable progress in developing efficient organizations, but further improvements can be made by the same methods suggested for the dairy farm. These will involve study of present practices, the formation of hypotheses as to a good one-man or two-men organizations, *followed by the testing of the results under actual conditions by a farmer*. The final organization might include more crop production than is practiced now.

With the data from specialized dairy and poultry farms it would be possible to employ the same procedure in working out desirable combination dairy-poultry enterprises. Some dairymen with limited acreage may improve their situation by such a combination.

(e) *The small non-commercial farm*

New England has a large number of self-sufficing, part-time and residential properties which are important in more ways than in agricultural production. We need to cooperate in developing ways and means for more productive use of *the human and land resources available* on these farms. This will involve *combinations of agricultural and rural industrial production*, or perhaps migration to locations where such combination is more feasible.

(f) *Mechanization*

The shift from horses to motor power has already brought tremendous changes to agriculture, but the full impact is not yet apparent because there has been a lag in the development, adaptation, and use of special equipment and machines. During the depression, the combination of low prices and low wages discouraged the purchase of expensive machinery, and during the war it has not been possible to buy it. Many ideas and plans in consequence have not found expression in the fifteen years of depression and of war. But the combination of circumstances in the postwar period is likely to stimulate these developments. The impact on New England agriculture is bound to be tremendous. The full use of these new machines and methods by competing areas can handicap the New England farmer. On the other hand, New England farmers who are still pioneers at heart and can reorganize their productive plants may have an advantageous position.

(g) *Adjustments in practices to meet price changes*

At some point along the road from a war economy to a peace economy the farmer may experience swift and large changes in the price of farm products, in wages, and in the cost of production of supplies. We need input-output data as a basis for decisions, particularly in regard to setting up workable and sound analyses as examples that can be followed by farmers in making their decisions.

As an example of this, in the war period we have witnessed a large expansion of facilities for freezing and drying eggs. The Government price-control program has altered the pattern of egg prices in the various markets. In addition, new marketing and transportation procedures and improved methods of production are underway in competing areas of the Midwest. These conditions bring up two

questions: What will be the position of the New England market-egg industry after the war? And how can we best meet it? Through the Research Council the New England States might consider a cooperative project to secure a better understanding of the situation. Such a study would involve special surveys in the competing areas as well as in our own section and probably would have to be worked out through the Bureau of Agricultural Economics. However, there should be an analysis of data with reference to the New England Industry.

* * * *

Farm organization in New England has not kept pace with improvements in practices. Farmers often will make sweeping changes in the production methods of one phase of an enterprise and then fail to take advantage of this improvement, a process that may require rearranging and refitting the enterprises into a better combination. For instance, some operators have improved the quality of hay but have continued to feed grain on the same level as before, while others have made sweeping changes in haying methods and then lost most of the advantage they gained by continuing an obsolete method of getting hay into the barn. Sometimes they purchase expensive machinery and then never learn to use it to advantage. Even though they perfect the machine operation they may leave production bottlenecks in the supplementary equipment. Large dairy operators still cut lanes through fields of silage corn by hand before starting the corn binder and others employ a crew of three or more men with the hay loader because they failed to shorten the old narrow 22-foot hay rack.

In recent years few farmers have kept abreast of improvements in all phases of their operations. Few have combined all the possibilities in a modified and improved organization. And so we approach the postwar period with a considerable lag in the adjustments that should have been made long ago. Efficient production will be so important and essential during the period which will begin a few years after the war that farm operators who fail to reorganize their productive plants may not survive.

Research also has a clearly defined responsibility to guide action agencies in New England. The objective point of view here outlined of isolating and analyzing problems and fitting action agencies into the solution of the important ones is greatly needed. The state experiment stations can do this to better advantage than can the sev-

eral agencies themselves. The economists should take more responsibility for research designed to relate activities to problems and to build a foundation for a more adequate social return from the efforts expended by these agencies.

Most of the projects discussed here involve the field of several specialists. A clinic approach has its advantages because it focuses the experience and training of several fields to the problem to be solved. However, it is difficult in most institutions for several workers to schedule their time for continuous cooperative effort. The cooperation of two individuals who work well together is a good procedure.

FULLER ANNUAL EMPLOYMENT OF FARM LABOR¹

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IT HAS always been recognized that one of the most difficult problems in agricultural employment is the seasonality of its crop labor requirements. These requirements vary widely from season to season so that much of the labor force necessary in periods of peak demand is idle during the remainder of the year. In some crops the variation in demand is extreme. Concentration of such crops into an area to the exclusion of other crops creates an immense number of separate jobs in the community. As a result almost anyone can get some work, great numbers of workers are apt to be attracted to the community, and the labor turnover is excessive.

While the problem is just as serious when manifested in idleness for the farm family, our best statistical picture is of the changes in employment of hired labor. In the United States the number of hired workers on January 1, 1942 was estimated by the United States Department of Agriculture at 1,655,000 but on October 1 it was double that or 3,268,000. In the Pacific coast states the number was 160,000 on January 1 but 3 times that or 476,000 on September 1. The first four months of that year in these states found from 160,000 to 172,000 hired workers on farms. In each of the next four months the numbers hired were 210,000, 244,000, 374,000, and 394,000 respectively. 476,000 were required in September. The next two months needed 150,000 less and December needed 100,000 still fewer or 236,000.² Local and single enterprise fluctuations are far greater. Walnuts, for example, need 93.5 per cent of their total seasonal labor within a two month period.³

The method of improvement with which this article is concerned is the organized extension of employment periods through the co-operation of farm operators. Farmers, instead of hiring whatever labor happens to be most easily available, by one means or another exchange labor with other farmers with the result that the workers

¹ Paper no. 111, The Gianini Foundation of Agricultural Economics.

² U. S. Department of Agriculture. *Farm Wage Rates, Farm Employment, and Related Data*. 1943. pp. 157-166 (processed).

³ R. L. Adams, *Seasonal Labor Requirements for California Crops*. California Agr. Exp. Sta. Bul. 623, July 1938, p. 17.

concerned have more continuous work over longer periods of time. The policy will be called cooperation in employment.⁴

Examples

A survey of agricultural employment will show that the policy of cooperation in employment is widespread. The policy, in fact, is implied in the supplementary use of labor between farm enterprises within a farm organization. The interest here, however, is the extension of the policy to a group of otherwise independent organizations.

Perhaps the outstanding example is that of harvesting grain in the great plains. There was a time when that task required a large force of itinerant workers. The number has been variously estimated up to 250,000.⁵ Some of the more experienced and astute established contacts which gave them considerable work but they were much more than equalled in number by those who obtained only occasional jobs. Lescoghier reported that the average of those he questioned "... spent 26 days in the harvest area, working 15 days and losing 11 days."⁶

In more recent years the requirements for itinerant labor have changed; the farm family does a larger proportion of the work. New machinery such as the combine and smaller threshing machine have contributed to this development but cooperation among farmers has also had an important part. In the use of threshing machines particularly where the crew for each "run" was formerly made up largely of itinerant laborers now most of the crew are farmers themselves exchanging work. They have reduced their cash costs at the expense of less important tasks.⁷ Each farmer extended his own employment in the more essential tasks.

The development, of course, has not been anything like complete. The possibilities, however, in the grain belt were brought out in a

⁴ Cooperation is used in a broad sense to include organization on both a commercial and a mutual basis.

A solution of a somewhat comparable problem, that of stevedoring, is called "decasualization." Boris Stern, *Cargo Handling and Longshore Labor Conditions*, Bur. of Labor Statistics Bul. 550, 1932.

⁵ Paul S. Taylor, *Migratory Farm Labor in the United States*, Monthly Labor Rev., March 1937, p. 538.

⁶ D. D. Lescoghier, *Harvest Labor Problems in the Wheat Belt*, U.S.D.A. Bul. 1020 (1922).

⁷ The writer lived in the great plains during the period of change and noticed that it was often forwarded by the family's desire to eliminate the social disadvantages of having itinerant laborers in the home or community.

recent study as follows: "... if a 'perfect' distribution of all available farm labor over a 7-week period were possible, the entire 1938 harvest in North Dakota could have been brought in without adding any labor to that living on the farms. Such a distribution is improbable if not impossible, but it appears certain that labor living on North Dakota farms plus local city and village labor available for hire, could have performed all necessary work, granting even a 50-percent effective distribution of available labor."⁸ According to the authors' estimates this would have eliminated any opportunity for employment for 25,000 to 30,000 itinerant laborers from outside the state.

No modern development has affected labor requirements so greatly as power and machinery. Not only do they reduce labor requirements absolutely but their efficient use often requires larger acreages than are under the control of most farmers and hence requires cooperative use. In such arrangements the farmer is freed to turn to other tasks to which he can devote greater attention. This in itself is often an advantage. Where a number of farmers make use of the same equipment that equipment will have a relatively long period of employment. Custom or cooperative work with tractor or team often is primarily an extension of the operator's employment opportunities.

In itself machinery need not have any particular influence one way or the other on peak labor demands and may as easily increase as decrease them. It can, nevertheless, decrease variations if the economic results justify. That is, if seasonal labor should become excessively expensive farmers may substitute machinery. The following examples do not necessarily have this effect but merely show that there are possible improvements in the use of labor through the cooperative use of machinery.

Nesius and Vennes estimate that the average farm tractor in Kentucky is used about 40 days per year. They estimate, however, that: "One tractor, with plow, disk, combine and pickup baler owned and operated by an individual or cooperative could be used 160 days out of the year in the commercial areas of the state. Labor requirements for producing identical crops are one-third to one-half lower on a tractor power farm compared with a horse power farm

⁸ R. M. Cullum, J. C. Folsom, and D. G. Hay, *Men and Machines in the North Dakota Harvest*, U.S.D.A. Bur. of Agr. Econ. and Farm Sec. Adm. cooperating, p. 9 (processed).

... an outfit operated *solely* for custom work without unnecessary idle periods would have a significant effect in relieving labor peaks."⁹ Thompson reports that in the Salt River and Casa Grande valleys of Arizona, "... 60 per cent of the plowing, most of the deep subsoiling, and about half of the floating was done by custom operators. . . ."¹⁰

In citrus, on all but the largest farms, such practices appear to be dominant or to be becoming so.¹¹ Operators specialize in one or more of the farm operations although some take over all operations. Sometimes an individual will do work on a neighboring orchard but more frequently the program covers a considerable number of orchards. Hawthorne and Turlington report that in Florida caretakers in some instances handle over 2000 acres.¹² Marketing associations frequently assume such duties. Hamilton and Spurlock report that of 39 citrus marketing associations in Florida, 25 performed one or more of the following operations for members: spraying, dusting, fertilizing, pruning, cultural work, irrigation, and tractor service.¹³

While no comprehensive data are available on the situation in California citrus, cooperation in employment is certainly widespread. Although the average holding is only ten acres with thousands much smaller in size, tractors are seldom found which are being used on less than 50 acres and 200 acres is common. Spray rigs cover much large acreages. Holdings of as high as 500 acres have turned spray work over to the large cooperative operators.

Cooperation applies not only to citrus operations which require expensive machinery. Individuals set themselves up as irrigators and by working for a number of growers obtain fairly continuous work throughout the irrigation season. Pruning crews will do the same, the pruning boss making contacts with owners and obtaining as much work as possible.

Similar employment of crews or gangs through the use of con-

⁹ E. J. Nesius and L. A. Vennes, Custom Operated Labor Saving machines, Kentucky Col. of Ag. and Home Econ. and U.S.D.A. Extension Div. Ec. Misc. 130, 1943 (processed).

¹⁰ Ned O. Thompson, Efficiency in the Use of Farm Machinery in Arizona, Arizona Agr. Exp. Sta. Bul. 174, 1941, p. 269.

¹¹ L. W. Otto, Cooperative Grove Care Development in Florida and Texas, The California Citrograph, May, 1944, p. 181.

¹² H. W. Hawthorne and J. E. Turlington, Absentee Ownership of Citrus Properties in Florida, Florida Agr. Exp. Sta. Bul. 287, 1935, p. 5.

¹³ H. G. Hamilton and A. H. Spurlock, Farmers' Cooperative Associations in Florida, Florida Agr. Exp. Sta. Bul. 386, 1943, p. 47.

tractors is common in many other California crops such as sugar beets, tomatoes, and lettuce. While again no comprehensive data are available, some workers have been able to obtain all the work they want. The contractors search out employment opportunities and thus provide a system by which fuller employment is obtained. The system has been subjected to abuses but is certainly preferable to having each individual seek out his own succession of jobs. O. E. Milliken, chief of the Sugar Division of the Agricultural Adjustment Administration, has a pertinent comment on this problem of the beet sugar worker. "The low incomes of sugar beet workers are more a function of underemployment rather than the absolute level of wages paid them. It has been noted that the average earnings per day worked are relatively high but the organization of the industry and the absence of other work opportunities make it difficult, if not impossible, to attain anything approaching an American standard of living. . . . The system of employment practiced by groups of adult male workers in California of following the crop from one state to another and utilizing all the available working time is a commendable utilization of employment opportunities."¹⁴ It is in such situations where great numbers of hired labor are required that the most significant problems and examples of cooperation in employment will be found.

One of the more important forms of cooperation in employment is found in marketing associations for fruits and vegetables. While some farmers may perform the functions individually, others turn the tasks over to an organization which, having a larger volume and covering the season of the entire community, can offer fuller employment to laborers. A single crew handles the work of all the farmers. The individual farmers might employ the same laborers but it would be highly unlikely. While many reasons can be given for such methods, the one of interest here is that the improved employment opportunities enable the farmers to select better workers, improve their supervision and training, and obtain more economical work and a higher quality of product.

The author is aware of no data which show the extent to which packing houses grade and pack fruits and vegetables for farmers but in fruits it is believed to be very common. In citrus it is very nearly universal. The picking in citrus is also done by packing houses, the farm operations ending with the fruit on the trees. After studying

¹⁴ Otis E. Milliken, *Agricultural Labor in the Sugar Industry*, Agricultural Adjustment Administration, Sugar Division, 1940, p. 16 (processed).

its operations one can hardly visualize individual farm owners doing the work. The opinion of fruit inspectors is that in those cases where it is so done the resulting product is inferior. Several thousand small owners could do it only at great inconvenience. Many of the owners are not resident on their small properties and have become accustomed to delegate the harvesting functions to the packing house.

As a result picking crews work from orchard to orchard hired and directed by the packing house and finding long periods of employment. Because of the peculiar nature of California citrus of ripening at different times and of storing for long periods of time on the trees, such employment is seldom less than for 2 months and often extends to 8 months in Valencias and 10 months in lemons. It might be possible for pickers to seek out steady work from individual growers but it is obvious that the packing house makes it immeasurably more certain.

*Possible Gains for California Citrus Pickers
from Cooperation between Houses*

An opportunity was recently offered to analyze the technical possibilities of cooperation in employment in California citrus packing houses. The data collected were the average payroll each month of each packing house for the five years, 1933-1937.¹⁵ The payroll was classified into pickers, men in the packing house, and women in the packing house. In this paper attention will be given only to pickers. For purposes of analysis the industry was divided into eleven areas, each one distinguished by climatic or organizational characteristics. In particular each area may be described as a possible unit for cooperation. They are, in fact, so operating now as occasion demands. The data, as used, may be regarded as a reasonably complete payroll record.¹⁶

¹⁵ The author wishes to express his appreciation to the Agricultural Producers Labor Committee who made the data available.

¹⁶ The distant and small production in Imperial Valley and Sacramento Valley was not included.

All Orange houses in six of the areas did not report. To correct for this lack the number of workers each month in each area was increased in the same proportion that the production of the houses failing to report bore to the production of the houses reporting. Data for this purpose was obtained through the courtesy of the California-Arizona Orange Grapefruit Agency. Since for these six areas the lack in all but one instance varied only from thirty to eight percent, this correction would seem to be reasonably accurate.

Some error lies in the fact that many workers on a payroll may not have been employed full time. However, the error would be large only in slack seasons and hence would only reduce the possibilities of cooperation. Also the important element in the payrolls was their seasonal relationships to each other, not their absolute amounts.

It must first be understood that each house alone offers rather long employment periods. Over the five years, the data showed that the average lemon house offered pickers work for an average of 7.2 months in the year. Orange houses offered work for 5.2 months. This rather long employment for a harvest operation is partly due to the cooperation in employment which each house alone represents.

The possible gains from cooperation between houses were measured by two methods, the one was of number of workers needed and

TABLE 1. EMPLOYMENT OF VENTURA COUNTY ORANGE PICKERS BY HOUSES AND BY MONTHS, 1933

House	Maximum employment of each house	Month	Monthly employment in area
—	25	January	90
—	51	February	156
—	118	March	172
—	93	April	164
—	57	May	161
—	20	June	282
	—	July	265
Total	364	August	279
		September	296
		October	302
		November	310
		December	70
		Total man months of work performed	2547

the possible reduction which cooperation might make possible. The other measure was of employment opportunity or months in the year during which the houses concerned could offer employment. Data on orange pickers in Ventura County, shown in Table 1, may be used to illustrate the methods used. The data on the left hand shows the numbers needed by each house in its month of heaviest production. If no pickers had worked for more than one house a total of 364 men would have been needed. If, however, workers had worked freely in all houses only 310 men would have been needed as is shown on the right hand side of the table where in November 310 men were required. This is a saving of 54 men or 15 percent in number needed. As is true throughout this analysis the changes made do not affect the time of operation.

The same data are used to show the improvement in employment

opportunity. Adding together the monthly employment in the area we find that 2,547 man-months of work were performed. If 364 men had performed this work they would have obtained an average of 7 months of work. If 310 men had done the work they would have had 8.2 months of work. The increase in employment opportunity of over a month per man is of material importance.

Data in Table 2 may be used to illustrate gains from cooperation between orange and lemon houses. It presumes that each group of houses have already carried out cooperation to the greatest degree

TABLE 2. MONTHLY EMPLOYMENT OF LEMON AND ORANGE PICKERS IN THE WHITTIER-LA HABRA DISTRICT, 1935

Month	Monthly employment in oranges	Monthly employment in lemons	Total monthly employment
January	443	160	603
February	406	71	477
March	422	4	426
April	369	105	474
May	234	280	514
June	133	335	468
July	126	368	494
August	133	365	498
September	126	368	494
October	163	342	505
November	168	263	431
December	265	131	396

possible. The largest number of pickers in oranges is 443. The largest number in lemons is 368. These two total 811 men, the number of pickers needed in the area if no pickers work in both crops. The largest number needed at any one time if they cooperate is 603, which is a reduction in number needed of 26 percent. Average employment is increased from 7.1 months to 9.6 months.¹⁷ It may be noted that the desirability of shifting pickers between oranges and lemons is a subject of controversy in the industry. Many workers and managers object. It is done, however, and if the proper supervision is provided seems to work out satisfactorily.

¹⁷ Table 2 illustrates also the possible gains if some changes are made in time of operations. If the employment of 603 men in the peak month, January, were reduced to 514, that of the next highest month, May, 89 fewer men would be required and the employment opportunity could have been increased to 11.2 months. Such a shift does not seem extreme for it would involve only 89 man-months of work out of 5,780 performed. However crop requirements are often rigid and one should not make assumptions about it without more information than is now available.

The largest gains were shown in shifts between areas. The largest possible average reduction in number of pickers required within areas was 15 percent but between areas it was an additional 22 percent. The total decrease in number needed was from 20,695 men to 13,058. Intra-area cooperation increased employment opportunity to an average of 7 months but inter-area cooperation increased it to 9.5 months. These technically possible gains are due to the different seasons during which citrus may be picked in the various districts. The interior districts have a preponderance of Navels, a winter fruit while the coastal districts have Valencias, a summer fruit.

It does not want to be assumed, however, that these gains from inter-area cooperation render it a necessary step if desirable employment is to be attained. Many individual houses offer very desirable employment. This was particularly true if they were operated by large ranches where workers could be shifted to cultural operations. Such houses offered an average employment opportunity of 8.4 months. Several individual areas offer excellent opportunities alone. Three areas offer about 9.6 months of employment and 2 others offer 8.4 months.

It is very doubtful, moreover, if the worst area, Central California, offering only 3.6 months of work should be included with the others. It is 175 miles from the principal citrus districts and the fruit offers excellent opportunities for exchange with other crops in the same area.

The remaining five areas individually offer pickers about 7.1 months of employment. By working together they could increase the employment opportunity to 9.3 months. This comes close to the possibility shown for the entire industry of 9.5 months and reduces the need of inter-area organizations to individual areas or relatively compact groups of areas. The particular groupings used are not necessarily what is best, they merely indicate that smaller organization units may bring results comparable to the industry wide organization.

There is plenty of experience, moreover, to show that organization between the five districts is feasible. It is estimated that normally 750 men shift between Orange County, the principal Valencia district, and the adjacent Navel districts. Most of the Navels are within 35 miles of where the pickers live, a distance regularly driven every day.

Various degrees of organization already exist to aid or control the movement between areas. The preponderant proportion of workers would appear to act independently, usually having, however, some acquaintanceship to aid them in locating a job. In a number of instances whole crews are shifted by the packing houses concerned with every care being taken to dovetail the work of the two houses to everybody's satisfaction. Group transportation is arranged for in some instances.

Packing house crews are also shifted. One of the more interesting practices is the contracting by houses for all labor from labor contractors. These labor contractors build up crews which are contracted out to the houses. In some cases the entire operation is taken over, the house management merely retaining ultimate supervision. In other cases only specific operations as packing are taken over. The contractors are able to build up crews which are better than the average, partly because of the fuller employment that is offered. Crews are shifted freely from house to house and area to area. The income of workers is materially improved. Houses are relieved of the task of looking for men at the beginning of each season. One exceptional contractor has developed a business which includes over 70 citrus houses and extends north to the apple industry of Oregon and Washington. While purely commercial, the enterprise constitutes an experience in large scale cooperation of the greatest importance.

The technical possibilities of cooperation in employment have been brought to the fore by the experience during the war. The objectives, of course, have been quite abnormal; they are to retain workers and to make maximum use of those available.

Perhaps the most interesting example in such cooperation has been in the use of nationals from neighboring countries. The contract by which they were brought in required that they be employed for 75 percent of the time. Actually in California a total of some 34,000 workers are reported to have been kept employed for 92 per cent of the time. Such a high percentage of time at work was, of course, made possible by the fact that the workers were imported only for seasons of high demand and by the policy of giving them first chance at all jobs available, once they were under contract. Nevertheless, the experience points the way toward a method by which steadier employment may be obtained.

Implications

These various developments and possibilities point to the formulation and adoption of a broader policy in agricultural employment. The narrower policy is based on the view of the individual employer and has reference to a single operation. The broader policy is based on the viewpoint of a group of employers who may be drawn into cooperation in employment and envisages the longest possible sequence of operations. Employment is lengthened by giving to established workers preference in all work. The experience thus far has demonstrated that the policy is sound and deserves every encouragement.

As has been pointed out the advantage which has been responsible thus far for the development has been the resulting economies and improved product. Another important result, however, has been a better living for workers engaged. No step can be more beneficial to these laborers than fuller employment and this result is inherent in the cooperative developments. It has, of course, always been recognized but its value has not been emphasized as it might have been.

To appreciate the effect of cooperation in employment on job opportunity a sharp distinction must be drawn between a required population and a redundant population. A required population is a population just large enough to do all the work. A redundant population is one in excess of a required population and specifically is that excess. The existence of a redundant population means that during the season of greatest demand there are more workers than there are jobs. The problem of the unemployed divides itself into the problem of the partially unemployed but required population and the problem of the unemployed redundant population.

Where a redundant population exists, there are more people than jobs. Adams found that in Kern County, California during 1939 there were never less than three workers available for every job. At this time of greatest employment, October, there were 156,000 man days of employment available but 277,000 man days supply of workers for which there was no employment.¹⁸ The workers who made up this 277,000 man days were redundant. Their absence would have had no effect on the amount of work accomplished.

¹⁸ R. L. Adams, Agricultural Labor Requirements and Supply, Kern County, Calif. Agr. Exp. Sta. Berkeley, Giannini Mimeo. Report, No. 70, June, 1940.

Where individual employers hire laborers and have in view only the immediate task, every worker in the community has a chance. Out of the multiplicity of employers and tasks each laborer can hope for some work. It is this condition which attracts a redundant population and prevents the required population from being reduced to a minimum. If a community could perfect organizations which would encompass all its seasonal labor requirements, the established laborers would have first chance at all work and outsiders would have little chance to obtain work and would not be attracted to the community. The required population would benefit by fuller employment. The redundant population would benefit by not being attracted to opportunities which must be divided with those already employed.

To achieve this desirable situation information services such as provided by employment offices will be necessary. A distinction must be drawn, however, between information services and the function of cooperation in employment. An information service directs laborers to the available work. Cooperation in employment offers better work. An employment office, of course, in offering its information can direct it so as to provide preference for established workers. In fact, an employment office might serve as the instrumentality by which fuller employment could be effected.

The possibility of excluding a redundant population from agriculture is important. It has been popular to charge farmer employers with responsibility for unemployed people who may be living in agricultural areas. The charge has been unwarranted for it has been our urban areas where most restrictions have been applied. Industrial monopolies, trade hindrances, unions, and the government have prevented the free movement of our population into non-agricultural industry where most of our expansion in production can take place. Farmers for obvious reasons are unable to do much to correct the industrial situation. They can, however, through cooperation in employment take steps which might discourage a redundant population from disposing itself on their hands and thus free themselves from the charge of responsibility for these people. Any such action, moreover, would have the very real merit of shifting the redundant population toward those parts of our economy where employment can expand in response to consumer wants. The farmer's real responsibility for the required population would be met by a step offering both improved incomes and lower costs.

Problems

While cooperation in employment appears as an important means of improving the laborer's opportunity in agriculture, there are limitations to its further development and there are problems involved which may not be easily solved. Many operations appear to be too isolated from other operations to be performed by the same labor force. This isolation is made up of a number of factors. The most important is that the operation is neither preceded nor followed by operations which can be performed by the same laborers. Also there is uncertainty as to when an operation will begin and end and as to the number of workers required. This uncertainty prevents the planning of continuous work. Differences in the character of operations excludes many from cooperation because the same workers cannot perform the different tasks required. Distance between jobs is still another factor. These technical limitations no doubt dominate any progress that will be made.

It has not been easy to make advances even where technically possible. Financial gains from cooperation are not easily established. Labor has been cheap. Producers of different products whose only common interest is labor have not been wont to give that particular interest enough weight to attract them into cooperative organizations. Marketing has been the principal unifying element in agriculture and it has largely followed specialized lines. Even then few products have only one marketing organization, usually several compete for farmer support and constitute a division against united action. Similar divisions exist in other operations where group action has been developed. It must be recognized, of course, that such division is the very basis of competition and of economical operation so that its condemnation is not justified.

The employees themselves constitute a major limitation on progress in cooperation in employment. Some lack the ambition to work continuously over any period of time. Those who are anxious to obtain steadier work must meet the competition of their less ambitious fellows who are apt to underbid for given jobs. Every employer who attempts to obtain more regular work for his men constantly encounters this difficulty of outside employees willing to work for less on a temporary job.

The immediate reaction of both employers and employees is usually antagonistic, certainly to any large scale enterprise. Both

groups are naturally averse to committing themselves to a larger program because it has many unknowns. Farm operations always contain elements of uncertainty and operators may well question plans which involve commitments to other operators on the use of labor. Laborers may well hesitate to assume responsibilities for work under different employers and in distant areas. Both know local circumstances and can allow for exigencies to which they are accustomed. These limitations would appear to become steadily stronger with every increase in size of the proposed organization.

There is evidence that unemployment insurance where applied has hampered the development of cooperation in employment. The question has been one of how distant work may be and of how different it may be without being ruled out as not suitable employment. Under the most favorable circumstances workers object to attempts to move them about from job to job and often refuse such opportunities. When they have the alternative of receiving unemployment payments they are more loath than ever to travel any distance or accept work of a little different character.¹⁹

One of the more difficult problems found in cooperation in employment is that it would make unionization easier. Employees would find themselves placed together in larger groups and each one would have a preferential position over outsiders. The machinery which might be set up to restrict casual turnover could also be used to restrict competitive bidding for the jobs on a long-time basis. Such a possibility naturally arouses the antagonism of employers and may also be viewed with concern by society in general.

If the organization comprised only a small sector of the industry, the employers in that sector would have good reason to fear unionization. Unable to have much if any influence over the price of their product, the employers could still be required to pay a larger proportion of the gross returns to employees. Moreover, the effect of labor conflict is apt to be particularly serious on agricultural production.

The situation would be quite different if cooperation in employment covered the entire industry. Restrictions on the use of labor could easily become restrictions on the amount of work done and thus restrict supplies and enhance prices. This result would be quite

¹⁹ This statement does not want to be considered as an over-all evaluation of unemployment insurance.

probable if an industry wide union was organized for it could serve as a powerful weapon against non-cooperative producers. Such restriction by the producers might well be forced on them by union demands.²⁰

Such possibilities warrant attention. If labor and management either alone or together, cooperate so as to restrict production, the consumer pays an unnecessary cost and any suggested advantages to society are illusory. Here then is an organization with potential advantages which may, however, be used to disadvantage.

The problem is one of developing modes of organization which will bring the benefits of cooperation without the evils of restriction. The problem, however, does not appear impossible because the objectives are quite distinct. The one applies to efficient use of labor the other to limiting its full use.²¹ The difficulty of avoiding restrictions, however, may appear to be so difficult as to warrant some skepticism about encouraging the development of cooperation in employment. At the best it can only approach the ideal which would exist if our whole economy were offering fully competitive employment. Under such conditions workers would simply not be available for short work periods except at rates above those generally prevailing or unless they did not want much work. Such an ideal will not lead us into the dead end alleys to which restrictive programs are prone.

The chief hope of avoiding restrictions would appear to be those obstacles to cooperation already noted and such obstacles will doubtless continue to exist if freedom of contract is maintained. If each local area at the same time could offer stability of employment while work is available and largely eliminate causal and irresponsible turnover, a very real contribution may be made to the well-being of those dependent on agriculture.

²⁰ "Unionism is only incidentally a means for raising labor incomes at the expense of profits or property income . . . the burden or incidence quickly transfers to the buyer of products, . . . via output changes." (Henry C. Simons, *Some Reflections on Syndicalism, Jr. of Political Economy*, March 1944, p. 15.)

"'Mad syndicalism' is not an impossibility with employers and union combining to raise product prices and wage rates in turn." (John T. Dunlop, *Wage Determination Under Trade Unions*, p. 227.)

²¹ About all that is really being proposed is that employers assume the responsibility of offering a worth-while job. Benedict has noted that an integral part of the problem is " . . . farming systems dependent on labor supplies for which operators do not have continuous responsibility through the year." (M. R. Benedict, *The Problem of Stabilizing the Migrant Farm Laborer of California*, *Rural Sociology*, June 1938, p. 188.)

THE FAMILY FARM

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IS THE Corn Belt family farm unit becoming obsolete? In industry and trade the small individual business unit comparable to the family farm is having great difficulty in maintaining itself, if it has not already disappeared. Farmer comment and observation suggest the possibility that the family farm unit is also in trouble.

Is the family farm worth preserving? Judging by the evident preference of farmers and farm neighborhoods, and the great contri-

TABLE 1. PERCENTAGE OF TOTAL FARMS IN MISSOURI AND THIRTEEN CORN BELT STATES IN EACH SIZE GROUP IN 1910 AND 1940. (FROM U. S. CENSUS)

Size Group	Missouri		Thirteen Corn Belt States*	
	1910	1940	1910	1940
Under 20 acres	7.1%	10.7%	8.6%	11.2%
20-49	17.1	15.4	13.9	12.2
50-99	26.8	22.4	23.6	20.8
100-174	28.9	27.0	29.5	27.8
175-259	11.6	12.9	11.5	12.4
260-499	7.1	9.4	9.8	11.2
500-999	1.2	1.9	2.5	3.2
1000 or more	.2	.3	.6	1.2
Total Farms	277,244	256,100	2,492,622	2,349,663

* East North Central and West North Central States plus Kentucky.

Note: The Census figures indicate that both the very small and very large farms are increasing rapidly in numbers. Those in between are either declining or just barely holding their own. The greatest decline is in those farms too small for good family-size units and too large for part-time farm units. Most family-size farms will fall in the groups from 100 to 260 acres. Those nearer 100 will be found too small for modern operation, and many highly successful family farms will go above the 260-acre size. The fact that those from 260 to 499 acres are increasing rapidly, while those from 175 to 259 are just a little more than holding their own, indicates that the tendency is to increase the size of the family farm unit.

but ion which these farmers have made to the economic and cultural progress of the region, the family farm should be preserved. More than half the farms in the Corn Belt are generally regarded as family farms. (See Table 1.) These farms have been characteristic of the Midwest since the land was first occupied by white settlers. Such farm units seem to be associated with social and economic stability, which make possible an attractive way of life in the open country.

It is evident, however, that changing circumstances have created some problems for the family farm unit for which solutions must be found. The assumption here is that the family farm unit should continue to play a major role in Corn Belt agriculture, that it will continue to justify its responsibility, and that two or three definite lines of attack are necessary in overcoming the difficulties which now confront the family farm unit.

Just what is meant by a family farm? It seems to possess two major identifying characteristics: First, unlike the subsistence farm, it provides for the family a satisfactory living and in addition a chance to accumulate savings for old age; and second, unlike the highly commercialized farm, the family farm depends very largely on the labor and management of the farm family with some exchange help from neighbors to carry on its productive activities. Family farm operation does not depend on hired labor.

Until recently the farmer's son wishing to remain in the profession of agriculture had a reasonable prospect of acquiring such a farm unit within his active lifetime. He might also expect to gain valuable practical experience either working with his father on the home farm or helping neighbors through at least a portion of the crop season. If he worked for a neighbor, he could expect to live in the home with the neighbor's family, eat at their table, and be accepted practically as a member of the family. By the time he was ready to marry and start out in business for himself he had accumulated enough capital, work stock and equipment so that by renting a farm in the community he could become a farm operator and be recognized as such by the community. Furthermore, he could expect to accumulate sufficient capital to make a down payment on the purchase of such a farm unit and thereby assure himself of a permanent location and place of business in his community. He could also look forward to completely paying for the farm within his lifetime or so nearly completing the payment that for practical purposes he was a full owner. He therefore assumed a close personal interest not only in the particular farm, but in those community activities which form an essential part of the life of a farming community.

There were no particularly wealthy people and no very poor ones in the community, and no obvious class distinctions. If sickness or other misfortune disabled a family, the whole community was ready to help even to the extent of planting, cultivating or harvest-

ing a crop, doing the chores, or actually replacing teams or tools lost by some catastrophe. Community life was essentially wholesome and democratic. Neighbors were trustworthy; locks on houses, gates or livestock quarters were relatively unknown. Contracts were usually verbal and repudiation the rare exception. There probably was more intolerance in the community than is usually found in urban neighborhoods; censure was certain in case of violation of the ethical or moral code of the community. The farmer undertaking to utilize an improved piece of equipment, a new farm practice or enterprise was certain to create lively comment, not always complimentary, and to be the victim of considerable ridicule. The neighborhood was usually slow to accept changes in methods, practices or social customs.

Then as now, management ability varied greatly. The measure of success was most often the number of acres of land a farmer had acquired or was operating. Such measurement, however, did not imply class distinction. The family on the eighty-acre farm was just as acceptable in the community as one operating five times that amount. The independence of each farm unit in determining what its production plan would be was not only greatly prized, but probably was a highly important factor for stability. Rewards were quite likely to be proportionate to effort and management skill exercised. Each operator was free to follow his own best judgment. There was a definite spirit of competition among neighbors in the matter of excellence of performance of the various operations on the farm. Straight rows or perfect checks in the corn field were quickly noted by all. A well finished fat steer or an even lot of pigs elicited comments of admiration from the neighbors and gave great satisfaction to the operator responsible.

A Change Has Occurred in the Family Farm Neighborhood

Such was the family farm neighborhood of the past generation, a symbol of democracy in action in the open country. To those acquainted with the present-day situation, it is evident that a considerable change has occurred in this rural picture. The family farm is still there, but it is more difficult for a young man to acquire one of these farm units in his lifetime than it was formerly. The contrast between the successful and well-to-do on one hand and the unsuccessful on the other is definitely greater. Information and guidance in the handling of farm problems has been greatly ex-

panded and is no longer based almost exclusively on community experience. The press, the radio, activities of the Experiment Stations and Extension Services are all increasing the knowledge which is necessary for effective agricultural production. New types of equipment, new practices, and new skills are suggested or required. The farm no longer produces directly as much of the living as it once did. The expense account for both living and farm operation has expanded to a point where the farm now requires several times the cash formerly needed to carry on its activities.

The market for farm products is no longer exclusively the local produce dealer or the nearest shipping point. All-weather roads, trucks, and other facilities either bring the market to the farmer's gate or extend it to the larger concentration point. The land itself, to produce as it used to, requires special treatment and consideration. With livestock greater attention must be given to sanitation, feeding balanced rations, and the like.

Where most of the farm work was once performed by the operator with the help of his family and occasionally his neighbors, now hired labor plays an increasingly larger part. The farm hand of today most often requires a house for his family, regular employment, frequently Saturday afternoon and Sunday off, and cash wages fairly comparable to city wages. The operator's own children must now be kept in school for eight or nine months each year, so that they are not available as effective farm help. Even chore labor is often interrupted by school or extra curricular demands. True, vocational training and projects are highly useful and practical, but these do not add to the availability of farm boys and girls for work on the farm and in the farm home.

Cash expenses are much more significant than they once were. Receipts from sales must be carefully compared with these cash expenses. Unpaid family labor and the contribution of owned capital are no longer adequate to absorb the shock of fluctuating margins between costs and income.

Labor developments in the industrial field are of growing concern to the farmer. The worker now available to the operator of the family farm makes unfavorable comparisons between farm wages and what he can obtain in some industry. This worker is less likely to be a neighbor boy, and the operator is not so sure he wants this laborer to live in his home as a member of the family; nor is the laborer himself eager to live in the home of his employer.

Some of the neighbors are using equipment and methods very different from those used in the past. Tractors are as often seen in the fields as are horses. Acres are covered more rapidly, requiring fewer man hours than in the past. In the community, farm consolidations are occurring, making practicable the use of larger tools and power units operated by skilled mechanics. These farms are generally handling two or three times as many acres per worker because of this change. Where the family farm operator was formerly accustomed to a rather diversified farming program, he now often finds it desirable to develop specialties, thus permitting the use of special skill and facilities which greatly increase his effectiveness.

Public regulation has entered the farming field and operators are often faced with the requests to make material changes in the farming system, sometimes even discontinuing or reducing long established enterprises or increasing others.

The public as well as the farmer is concerned with what is happening to the productivity of the land. With all the improvements in methods and practices which have been developed, the productivity of land has not been increased. In most cases it has not even held its own.

Adopting Industrial Methods May Be Necessary

What does all this change mean and how does it concern the family farm?

First of all, agriculture seems to be compelled to follow the example of industry if it expects to compete in procuring labor and capital, and keep its costs in line with improvements in costs in industry. Operators of commercial farm units have already learned that this is possible. They, like industry, by great emphasis on efficiency are reducing costs through attention to the use of labor, machinery, power, fertilizers, and other means.

On those farms where highly commercialized methods are not feasible a serious situation exists. With usual methods and practices, moderate product prices will result in incomes so meager that the living level of the operator and his family will be disappointingly low, and saving or paying off debts will be next to impossible. Present prices are very favorable, but in the longer run it will become necessary for family farm operators to adopt more commercial methods and policies. Furthermore, there may be some advantages which the operator of the family farm unit can use to offset other

handicaps, thus permitting the retention of those highly desirable features possessed by the family farm unit. Not only will it be necessary for agriculture to keep abreast of other industries in improvement in methods and techniques if it is to expect comparable rewards, but the family farm must either compete with highly commercialized agricultural production in effectiveness or be gradually relegated to a standard of living nearer the subsistence level.

These more significant developments which concern the family farm unit may be grouped as follows: (1) The general trend toward greater industrialization and consequent substitution of capital (machines and power) for men; (2) labor policies involving organization, increasing public regulation of hours, wages and working conditions; (3) difficulty of acquiring ownership of the farm or comparable security of occupancy by some other means; (4) the necessity of changing from a depleting to a conserving and restoring agriculture.

It was indicated earlier that our entire economy has been rapidly moving in the direction of greater use of capital in the form of machines and power. The result has generally been increased productivity throughout industry. This means that more product has resulted from a given use of labor and capital. Not only has more product resulted but this product has in general been a better or a less expensive product, so that the real gain has been greater than increased production would indicate. This has been the chief means by which American industry has been able to pay higher wages per hour of labor and at the same time reduce the price to the consumer of the product while furnishing a superior product. This has perhaps been the chief cause of the constantly improved level of living.

What industry has accomplished agriculture must try to equal. The farm unit setup which can come nearest doing this will be in the strongest position in our competitive economy. Industry accomplished its achievements by constantly increasing the skill of its workers and furnishing those workers with better and better tools. The amount of power under the control of each worker was greatly increased.

Industry has had a definite advantage in being able to control practically every element which enters into the production process. It has not had to contend with the whims of the seasons and a decreasingly effective supply of the chief raw material, namely, the soil. Furthermore, the price at which most of the product is to be

moved is generally known in advance of production, which has enabled industry to avoid many inefficiencies which spring from a production process in which all the production costs are incurred before any accurate knowledge is available concerning the price at which the product will move. High costs and low prices or low costs and high prices occur much less frequently in industry than in agriculture.

Just how can the family farm operator utilize modern industrial methods? One means certainly will be to adapt all usable mechanical and power improvements to his own farming system. There are many possibilities, particularly in connection with his field work. Instead of undertaking field operations with two or three horse power, he can with appropriate adjustments utilize several times that amount of power and accomplish a correspondingly greater amount of work in a day. This will enable him to more nearly meet industrial wage competition. He can pay higher wages for fewer hours and greater accomplishment. This will apply to those field operations with higher work requirements. If this work is performed by the operator or members of his family, they can claim the increased productivity as a contribution to a higher living level. This is the direction which commercial farms have taken in successfully meeting industrial competition. Some of our family farm operators have done likewise and have succeeded in increasing their output per worker from 50 to 200 per cent.

With livestock production the solution is not so simple. Industrial techniques are difficult to apply to this phase of agriculture. Studies indicate that corn belt crop labor requirements have been cut about 50 per cent, but most livestock requirements have been reduced only 5 or 10 per cent. In the case of livestock, the actual gain per hour of labor has been somewhat greater than this because of improved productivity of the animal requiring the care. For illustration, the average hen of the typical farm flock 20 years ago produced less than 80 eggs per year. Now her production is 120 or more. Thus while she requires approximately the same number of hours of care, the product realized for those hours has materially increased. With the beef enterprise the change from dry lot feeding to a grazing system, especially in Missouri, has greatly reduced labor requirements, making labor costs more comparable to those incurred under range conditions. When to this is added the significant fact that unpaid family labor performs most of this work,

the family derives practically all of the benefit. With the milk cow a similar illustration could be given. Thus with livestock enterprises while farmers are definitely limited in labor economy possibilities, the opportunity to increase the productivity of livestock is considerable, thus in effect accomplishing the same objective. There seems to be one significant difference, however, that livestock labor saved is non-rush season labor and therefore lower priced labor. Thus the greater saving of crop labor carried with it a higher per unit significance.

There is a third possibility which must not be overlooked. While industry must frequently adjust volume of production activities and, consequently, the employment of workers, for agriculture the situation is just the reverse. The workers on family farms can be left idle but not discharged, thus operating costs cannot be reduced by the simple expedient of "laying off" workers, as is the case with concerns using only hired labor. Neither are labor costs increased by keeping these family workers fully employed. The farm operator's problem then becomes one of providing a maximum of high income employment for family labor and filling in the remaining hours with work which, while less profitable, still returns more than the material cost involved in such work. Even a small margin between material outlays and the value of the product in the case of these "filler" enterprises will increase the farm income. This practice is of special significance on the family farm and explains the persistence on these farms of activities which could not be justified if the necessary labor had to be hired at commercial wage rates. This helps the family farm operator to offset some of the disadvantages he experiences in competing with more highly industrialized farming.

In the field of labor policy farm operators are confronted with some potential difficulties. Strikes and walk-outs would be fatal in agriculture. The 8-hour day or the 40-hour week, if rigidly applied, would be just as bad.

Agriculture being a biological industry and not readily susceptible to the application of controls which are being applied in industry requires a very special kind of labor policy. Some phases of industry are comparable. The coal mine, for instance, must have maintenance 365 days a year. Salmon canning must be pushed in season. With agriculture the problem is similar. The livestock farm must be operated 365 days a year. Crops must be planted, cultivated, and

harvested in their season. As many hours as possible must be given to each enterprise within the crop season.

One of the most important points of attack in readjusting family farm operation to enable it to withstand the pressure now making family farm operation more difficult is found in the labor field, from the standpoint of both labor supply and labor practices.

As already indicated, the family farm of a past generation could count on its own resources for most of the labor supply, but because of certain developments this is now less practicable. The farm boy, who used to make a hand from the time he was 12 or 14 years old until he reached his majority and was ready to start farming for himself, is now required and encouraged to remain in school through the grades, high school, and frequently college for so large a part of the year that he can be counted on only to a very limited extent to assist with the tasks on the farm. His free time for farm work other than for chores is usually in the grain and hay harvest season, but his help is generally not available in the main planting season nor at corn harvest time. Fortunately for the farm operator those operations which come within the school year are often well adapted to a high degree of mechanization, so that fewer days are required on farms adequately equipped with modern machinery. The proprietor can often perform all these operations within the time limit if he has available the best adapted tools. This only emphasizes the fact that a careful plan of mechanization is necessary to make allowance for the larger numbers of workers which were at one time used in getting spring and fall work done.

An aid in developing substitutes for the farm boys and girls who are now in school most of the year is the increased practice of exchanging labor and cooperating in the use of equipment. Much of our modern farm machinery is too costly for individual ownership and exclusive use on our medium sized farms. Thus an operator in substituting a one or two-row corn picker for the man power formerly used, but now not available, may find it advantageous to join with a neighbor in requiring the corn picker to cover more acres than if its use is confined to one farm. He thereby shares with the neighbor the cost of ownership. Many other illustrations might be given.

Another illustration of making a reduced labor force more effective is that of using adapted fertilizer or an improved variety of seed to increase yield per acre, thereby increasing the effectiveness

of the labor involved in performing the needed operations. It takes no more time to plant an acre of well adapted hybrid corn than to plant one with seed which has lower productive powers. With the same number of hours of labor the number of bushels raised may easily be one-fourth greater. Likewise the proper application of fertilizer to a small grain crop adds only an insignificant amount to the labor cost of growing that crop, but it is likely to increase the yield from 15 to 30 per cent. Thus the cost per unit of product is materially reduced.

The use of one-year rotations including small grain and a legume with their appropriate cultural practices will greatly reduce the number of hours of labor customarily given to the growing of each of the crops involved, and will also frequently increase the net acre yield by 50 or 75 per cent. Full use of such practices as those indicated will help meet the problem of labor shortage.

In some communities the school term is adjusted to permit use of school children in those enterprises having very high labor requirements for short periods of time. This is especially true with such operations as potato digging, cotton picking, and similar tasks.

Another phase of the labor problem involves rates per hour being paid for short-time service in other industries compared with customary wage rates in short-time farm operations. Farmers are accustomed to harvest time wages perhaps a half more than those paid regular farm help. If a hand is hired for the season for \$2.00 a day and board, a wage of \$3.00 or \$4.00 without board has been regarded as a reasonable harvest rate. It may well be possible that the rate per hour or per day for a short harvest period would and should be several times the rate allowed for regular farm employment. Thus the farm operator might justify paying \$5.00 to \$10.00 a day for a few days' work when he is able by the use of modern machines and power to dispense with the full-season worker on whom he used to depend.

In the foregoing, the figures are purely assumptions used to illustrate the principle. Expressed in economic terms, this principle is that of opportunity cost. A careful consideration of this possibility will lead to the conclusion that for short-time needs farm operators may well afford to offer wages very comparable to those paid in industry for highly skilled workers.

A possibility of considerable promise in enabling family farm operators to interest workers in those operations of highly seasonal

nature lies in the field of accommodations offered workers and various plans of sharing the product. First under accommodations are included those contributions to the worker's living and comfort which a farm can provide. If the worker must live in town and come to the farm only during work hours to take care of these short season tasks, then his money wage will of necessity be similar to that he would receive in other employment available. If, on the other hand, the farm can offer him quarters and board or facilities for providing his own board, the money wage will be considerably reduced, depending on the extent of these other facilities. A considerable portion of the wages paid in urban communities must of necessity go to cover living and transportation costs. If the farm can provide an important part of the living of the worker and transportation cost is eliminated altogether, then obviously the money wage to be equivalent to non-farm opportunities for the worker will be greatly reduced.

The farm operator who anticipates this situation will provide from the farm as much as possible of those products entering into the board of the workers. These products can be charged against labor cost at producer prices; whereas, if the cash wage must cover such costs, with the worker living in town, these costs are figured at retail prices. The difference between these two items is frequently 50 to 70 per cent. Farmers have not in general taken full advantage of this situation.

The plan of offering workers (frequently his own sons) a share in the product, is often used by the operator to stimulate the interest of the worker in doing an unusually good job. Thus the operator will agree with the worker on a certain money wage and accommodations, and in addition the worker is to receive a share of the product, of the particular enterprise involved, over and above the average or normal production for that enterprise. Thus, if it is a potato crop and the average yield for the farm has been 125 bushels per acre, and by unusual care combined with a favorable season the crop yields 175 bushels, the worker would get a share in the 50-bushel excess. This practice can be applied to a great many farm enterprises and give the worker more than just a wage interest in his job.

These items are especially important on the family farm because year help is not usually needed but there will be instances when a two-man crew is needed in the interest of economy. That portion of

the second worker's job which can not be performed by members of the family or on an exchange basis with neighbors must be allotted to hired workers. On the typical family farm this may amount to three or four months' work.

A further modification of customary practice in the management of hired farm labor involves a more widespread adoption of practices generally accepted in industry, including time off with pay and adjustments in hours of work which allow for long days in critical periods. The most successful farmer employers at the present time make definite allowances for time off during the month. This vacation with pay can not always be set for a regular time but a specific amount can be allowed. Deductions from a worker's pay for time lost, as long as it comes within the time off allowance, is thereby made unnecessary and has been found to greatly improve the attitude of the worker toward his employer.

Acquiring Security of Occupancy of a Family Farm Unit

While means of financing the purchase of a farm are more abundant and better adapted than they were a half-century ago, the prospect of actually paying for the family farm within the span of active years of the operator is less encouraging. This may be attributed to several developments. First, land is now more expensive relative to its contribution to production than it was fifty years ago. The price per acre has advanced but yields have not. The capital outlays necessary to get present production have materially increased. It now requires the net income from more acres to pay for one acre than was required a half century ago.

The farm operator's cash expenses are larger than they formerly were. A part of this is because of the growing requirement for cash needed in operating the farm and for family living. More of these costs are cash costs and, therefore, must be met out of cash sales from the farm. Maintenance of fences, buildings and other improvements more often require cash outlays. Taxes in dollars actually paid are higher. More machinery requires more repairs and these repairs more often mean cash expense. Seed is generally purchased where once the operator produced his own. More medicines, disinfectants, and serums are now required. Breeding fees generally call for cash outlays, or sires at fancy prices are substituted therefor. Automobiles, trucks, and tractors need cash for repairs, fuel, lubricants, tires and licenses. Breeders association and farm

organization dues have become more significant. The increased requirement for operating capital means that more years of saving must be devoted to this use rather than to payment on the land. Along with these increased operating capital requirements goes an increasing reluctance on the part of most land to provide as much production as it once gave.

Increasing cash requirements for living are important. Dues of various kinds, greater dependence on retail stores than on home resources; at least until the present war, participation in community activities, and many other items now accepted as essential, greatly increase the demand on farm sales for cash living expenses. The farm family of today actually spends for living two or three times as much as was required a half century ago. The improvements and practices which make this expense necessary are highly desirable, but in general they have added nothing to the physical output of the land. Undoubtedly, they have added greatly to the attractiveness of living. This means that a larger portion of farm land prices today is payment for the privilege of living on that land and in that community than for the inherent productivity of the soil.

Owning and occupying the land farmed is generally regarded as the most desirable situation, especially in family farming communities. No other means has yet been devised by which security of occupancy is as nearly guaranteed or satisfaction of ownership is so well expressed in a sustained effort to maintain an orderly and homelike atmosphere. However, ownership that is associated with a dangerously heavy mortgage does not create security of occupancy. If the prospect of paying for the farm within the active lifetime of the operator and the necessity of over-burdening the farm with mortgage debt seem too discouraging, the possibility of attaining security of occupancy by some other means may well be considered. Undoubtedly the importance attached to home and community features is every year assuming greater significance in the case of the family farm, and in too many cases the productive powers of that land are decreasing. Thus the land itself is contributing less, and its home and community aspects more, to the satisfaction of possession. Home and community attractions of a particular farm do not help retire the mortgage debt. This must be retired from the sale of products. If more of the product is required, it must come from a reduced living standard. If the living standard must be seriously lowered for most of the active lifetime of the owner in or-

der to permit enjoyment of ownership, it may become too heavy a price to pay for the privilege.

To meet this difficulty there is developing in the Corn Belt the tendency to make longer leases on tenant farms and give greater consideration to farm maintenance and improvement. It is possible to achieve security of occupancy and assurance that improvements made by the operator on a rented farm will equitably benefit him. Where such an arrangement is used, the operator may have most of the advantages of owning the land without sacrificing living standards.

It should be evident that if a farm operator must devote part of the income from the farm to the payment of rent or interest on a mortgage debt, there will be less available for living and saving. Thus in either of these cases, if a level of living comparable to that of the neighbors on the debt-free owner-operated farms is desired, the farm must be larger than the neighboring farms. The owner operator's living level is supported by both earnings of the real estate investment and of the operator and his family. In the case of rented land that portion of the farm earnings attributable to the real estate is more frequently spent off the farm entirely. Also on this rented land, allowance for full maintenance of the soil and repair and replacement of improvements is seldom made. Most Corn Belt tenant-operated family farms were once owner-operated, and in passing to a tenant farm status they have not increased in size but have frequently decreased in productivity. This makes it increasingly difficult for the family on such a farm to enjoy a living level comparable to that of the neighboring owner-operators.

The Family Farm and the Conservation and Restoration of the Productivity of Land

Past family farm experience suggests that while these farms, like all other classes of farms, have not generally been fully conserved, still a proprietorship interest by the workers on the land has caused more attention to be paid to the conservation of the soil and its improvement. The cost of conservation will tend to be lower on the owned family farm because family labor does the work of conservation at times when other duties are not pressing. This means a low real cost of conservation. On farms where the work is performed chiefly by hired labor, this labor not only requires supervision in performing tasks of maintenance or improvement of the soil, but

regular wages are paid for this work. This makes a relatively higher cost. If the work is performed with equal efficiency on both the family and commercial farm, the family farm will have an advantage.

Maintenance of the productivity of the land can be secured on the family farm at a lower cost for another important reason. Livestock and maintenance or improvement of productivity are closely related, and in the Corn Belt livestock is most often associated with the family farm. The maximum labor needs of livestock occur in the slack crop production season. The family labor force being constantly available but otherwise not fully employed in this non-crop season makes the care of livestock a low cost operation.

A great many of the cropping methods and practices developed for conserving the productivity of the farm depend on livestock for their most effective application. Many of the crops involved would be unmarketable except through livestock. The situation is even more favorable than this; actually there exist many examples of farms where well-balanced combinations of soil conserving practices and productive livestock have resulted in increases in both soil productivity and physical production for sale.

Maintenance of the soil may be a less expensive process on the family farm as compared with the commercial farm, because of the cheaper labor available to carry on maintenance. Many of the tasks of maintenance are performed at times when labor would not otherwise be employed. On the family farm this is not paid for in cash. The family farm sometimes does not do as substantial a job of maintaining soil and improvements as is done on the well-financed commercial farm. This may be because of lack of finances, lack of appreciation of the importance of maintenance and restoration or ability to use temporary measures, and repeat these at frequent intervals because time and home-provided materials are more plentiful than cash.

In many communities less attention is given to maintenance of the land and its improvements on tenant farms or heavily encumbered owner-operated farms. This suggests that the farm income probably is not sufficient to permit a living comparable to that of the neighbors, to maintain the farm and its improvements, and satisfy the other demands of the landlord or mortgage holder. It seems to require both family and investment earnings of the farm unit to permit maintenance and a modest living level.

A crisis is impending in the field of restoring productivity of the

soil and the replacement and modernization of farm improvements. According to the conclusions of soils specialists, more than half our land acreage has lost at least a half of its productive powers. This loss has been partly concealed in the gains in technology, which in too many cases have only refined and improved the means of fertility extraction. Many farms are also facing the no-longer-postponable necessity of replacing many of the farm improvements and adding more to make effective operation possible. These conditions point to the imminent need for additional capital outlays and the application of restorative measures which will either consume present capital reserves or constitute a mortgage on future reserves and labor. In modernizing the farm to permit effective production, the family farm unit will require an aggressive policy to maintain its relative efficiency.

The importance of restorative measures will be more appreciated when it is remembered that improvements in production add more to living and saving possibilities than the percentage increase in gross production indicates. For illustration, if through soil improvement the gross production per acre of a field is increased by two units at a cost of one unit, thereby raising the cost from 15 to 16 units per acre while the yield increased from 18 to 20 units, there results an 11 per cent increase in yield, a seven per cent increase in cost, but a 33 per cent increase in income available for living and saving. Or, if the improvement necessary to secure the increase of two units is in the nature of a permanent improvement, the gain in production of two units per acre would justify a capital investment or outlay of 15 to 20 times the money value of the two unit increase. It is quite likely that part of the effort to get the two unit increase is a current expense and part of it a permanent improvement; for example, fertilizing or liming and the construction of terraces and waterways.

Unless these needs of the family farm are dealt with vigorously by the operators, it should be evident that the productive efficiency of these farms will decline. With the great increase in productive efficiency in industry it will be necessary for agricultural operators to make similar progress if they are to maintain a comparable level of living. Those farms which still depend on extracting and marketing the productivity of the soil can not expect to maintain comparable standards. Public aid in maintaining an acceptable living level, without basing such aid on restoring and improving the productive

powers of the land, can hardly be justified on other than a temporary emergency basis. Most family farm operators would be unwilling to accept such unjustifiable public aid.

It has already been indicated that probably the most productive means of meeting this situation are to be found in an adequate supply of operating capital including modern equipment and power, and in the application of the best available information on breeding and cultural methods to increase the production per unit of land and hour of labor. A very careful balancing of labor, equipment, power, and land can contribute by giving higher quality products and better treatment in the market place, and permitting the use of a maximum proportion of the family's available labor at those activities which are most productive. The use of an optimum amount of fertilizer, improved seed, livestock of high producing strains, a better development of work schedules emphasizing timeliness, and an adequate campaign of disease prevention through effective farm sanitation, can double the productivity of the family on the typical family farm. At least 20 per cent of the family farm operators are now producing twice as much as the average and four times as much as the least successful one-fourth. This accomplishment is not the result of luck or more adequate financial resources. It is due to more effective planning and execution of that plan.

More complete cooperation within the community is another means by which greater productivity may be achieved. Studies indicate that neither the labor force nor the equipment on most farms is as completely utilized as it might be. These results do not mean that farm operators are actually idle an important part of the year. Many of the jobs on the farm require at least two men for effective performance. For some jobs a crew made up of four or five neighbors will result in more than doubling the efficiency of the individuals making up the crew. For illustration, a pick-up baler with an average crew will bale approximately 40 tons of hay per day on good days. A farm operator with one helper attempting to harvest this amount of hay will require two weeks or more for the job, and when it is finished the product will be of poorer quality than if it were cured and stored more promptly. Furthermore, it will often be stacked in the field where it will have to be moved again before it can be fed. Obviously a much better use of the man power of the neighborhood is achieved by forming a crew to do the work. A one-row corn harvester will cover from 5 to 10 acres per

day, while a farm operator husking that corn by hand will cover about 2 acres per day. The time saved is only one part of the actual gain. What may be still more important is the other work which can be accomplished in the days saved.

At least 20 per cent of the practicable time of the major farm tools is unutilized, according to reports from nearly 9,000 Missouri farm operators. With a reasonable development of community operating programs, that unused time, amounting to as much as 50 per cent in some cases, could be utilized, resulting in the release of a large amount of man power. This is not to imply that it is as satisfactory to have three or four neighbors using a given tool as it is for each one of them to own one, but the use on several farms of the more expensive but time-saving pieces of equipment can greatly reduce the capital requirements of these farms and lower the costs of production. Such practices can also make it unnecessary for a family farm operator to give his entire time and that of his family to farming operations on an area half the size of that handled by a neighboring farmer with a similar labor force. It is quite likely that the majority of well-operated family farm units will find it necessary to join with neighbors in providing the labor, equipment and power necessary to equal the effectiveness of the commercial farm operator. There is no reason why a one-row corn picker should not cover from 100 to 150 acres of corn per year. This is more corn than the average family farm unit will grow. The pick-up hay baler will handle from 1,000 to 2,000 tons of hay per year without serious difficulty. This suggests that such a tool should serve several farms. A tractor outfit can break and prepare the seedbed for spring or fall seeding two to five times as fast as the average family farm operator performs this work with the usual equipment. To get effective use of men and equipment and maintain a favorable cost of production figure, equipment for such operations should be shared by the family farms of the neighborhood. Otherwise commercial farm operation will make it difficult for family farm units to compete.

The Division of Farm Income Between Investment in Land and Wages of the Farm Family May Need Revision

The family farm has a difficult question to deal with when it comes to deciding what portion of the farm income should be credited to the investment in the farm and what portion should be

credited to the work of the operator and his family. On the highly commercialized farm this is not so much of a problem, because in many cases the management and labor are hired and these are taken care of in the expense account before farm income is determined. On the family farm where the proprietor and his family and his capital all work together to secure the farm income, some division of that income between these two interests must be determined. While this process of division is not actually made, it is accomplished in the thinking of farm operators and its effects are far-reaching. The portion of farm income allotted to capital eventually plays a major part in the determination of land value. That part allotted to the operator and his family as pay for their effort determines their living level. Consequently, if the investment is favored in the division, land values will be higher and living levels lower.

The tendency has been to favor the land in making the division. This has resulted in higher land values and less improvement in the living level than may have been ideal for the industry. The tendency in non-agricultural industry, sanctioned by public policy, to minimize the earnings of capital and place increasing emphasis on rewards to labor, suggests that, unless agriculture adopts a similar philosophy, the living level on family farms will not improve by comparison.

Attempts to determine the responsibility for increased receipts from farms indicate that operating capital, management, labor, and land contribute in decreasing amounts in about the order given. In the face of a decreasing contribution made by land, the record shows that for 120 of the past 150 years land values have advanced. This advance can not have been due to the contribution of the land itself. The impression is that the division of farm income has favored land as compared with the other factors contributing to production. It may easily be that the land should have received a smaller share and the family of the operator a larger one, thereby allowing greater improvement in the level of living on the family farm than has actually occurred.

Summary and Conclusions

The family farm as it has developed in the Corn Belt occupies a position between the subsistence farm on the one hand and the highly commercialized farm on the other. It differs from the sub-

sistence farm in that it not only provides a more acceptable living level but it also allows opportunity to acquire a farm or accumulate savings for old age. It differs definitely from the highly commercialized farm unit in that the management and most of the labor are furnished by the operator and his family.

The family farm has contributed much to the stability of Corn Belt agriculture. It stands as a symbol of independence and freedom of action which is worth preserving. It has developed individual responsibility, initiative, a cooperative attitude among all members of the household, and a feeling of community responsibility unequalled by any other type of agricultural organization.

Industrialization and increasing importance of capital in production have developed problems with which the family farm is not successfully dealing. Other types of business unit seem better able to utilize power, labor and skilled management, and thereby make it more difficult for the family farm to compete.

The exhaustion of the supply of new productive lands and the gradual depletion of productivity of the lands farmed are requiring the adoption of conserving and restoring practices which involve a rather drastic change in costs and income computations. Adjustments to meet these cost and income changes will require vigorous action on the family farm.

Full use of modern equipment and power will be necessary to meet this challenge. A greater development of cooperative ownership, custom hire or exchange in the use of equipment and service will be required.

Greater emphasis must be placed on the supply and use of operating capital.

More acres will probably be required to permit efficient use of modern equipment and power.

Sustained or improved incomes for the family are possible if these adjustments are made. To encourage the retention of the family farm unit, these improved incomes must be used for improving efficiency of operation and the living level on such farms rather than for capitalization into higher land values.

A POST WAR PROGRAM FOR AMERICAN AGRICULTURE

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AMERICAN agriculture has been exploitative of fertility over virtually its entire history. The program for the future must be in simplest terms a reversing of that process so that fertility is rebuilt. If in the past, therefore, farmers have been engaged in *minimizing fertility* such a new program may by contrast be called one of *maximizing fertility*.

Actually the program would be complex in both design and ends though chiefly it would consist in restoring to the lands to be retained permanently in farming the fertility elements that have been so unwisely removed in the past. Chiefly, there will be required great supplies of lime, phosphate, potash and nitrogen together with smaller amounts of other fertilizer elements. However, in some locations it is not fertility so much as some other aspect of land productivity that has deteriorated. Over the great grazing ranges of the intermontane regions, for instance, fertility is often still not a limiting factor.

In areas where erosion has been and is severe the restoration of fertility must be preceded or accompanied by terracing, contouring and other erosion control measures. In still other areas it is chiefly some condition of internal soil structure that must be ameliorated so that the land must be kept in sod for long periods and tillage restricted to relatively short intervals.

Soils are, furthermore, by no means alike in their capacity to store up the elements of fertility for later exploitation and the program must be adapted to that fact. Likewise, there must be adaptation of the program in relation to the main crops to be produced in particular areas. The maximum fertility for one kind of crop or rotation is not the same as that which would give maximum results in yields and reserves for other crops and rotations.

In the South particularly, attempts to build up the nitrogen content of the soil are sure to be of small avail though lime, phosphates and potash may be better retained. The program for Dixie must, therefore, be one of building up reserves of these latter three and creating supplementary stock-pile reserves of nitrogenous

* On leave of absence with the American Military Government.

fertilizers if the necessary flexibility of production in emergencies is to be achieved.

The Availability of Fertility Elements

An immediate problem confronting a program proposing to maximize the fertility of lands to be retained for farming is the availability of the needed huge amounts of fertilizers. Some of these have been fairly expensive in the past and greatly increasing their production will result in the exhaustion of the most readily available raw materials.

However, the outlook for sufficient supplies is an extraordinarily good one for the reason that all elements of fertility exist in nature in virtually unlimited abundance. The problem of supplies is one of providing the needed incentives for production. Element by element the situation is briefly as follows:

1. Calcium. Most states and many counties within states have enough limestone within their borders to supply the needs for the entire country. Crushing facilities of sufficient capacity and transportation need to be provided. Fortunately limestone is very broadly distributed throughout the nation and few soils needing lime are at any great distance from sources of supply.

2. Nitrogen. Nitrogen exists in unlimited amounts everywhere and needs only to be put into a form usable by plants. There are two major methods of nitrogen fixation, the one by legumes and the other by an electrical process directly from the air. Fortunately the legumes are themselves among the finest of food and forage crops so that a preponderant proportion of the restoration of nitrogen in the soil can be accomplished by subsidizing adequately the growing of legumes. To grow well, however, legumes are critically dependent on ample supplies of lime and phosphate so that in many locations these must be supplied in connection with programs to increase legume acreages.

For nitrogen stockpiling there should be plants for synthetic nitrogen production installed in all sizeable water power generating plants where any considerable excess or unused capacity (daily or seasonally) exists. Generating capacity not otherwise employed there at any time could be turned to use for nitrogen fixation.

3. Potash. Not all soils need potassium and there are, apparently, abundant supplies of this element for purposes of the program suggested herein. The first considerable attempts at potash

production in the United States occurred during World War I, and in the interim between Wars I and II there were discovered vast and readily accessible deposits of this salt so that, as in the case of calcium, it is only processing and transportation that need be provided. Transportation will be for much greater distances than for limestone but much smaller quantities will be needed.

4. Phosphate. Phosphate supplies are, apparently, much less completely assured. Actually, amounts of phosphorous are quite unlimited in nature but rich rock is not so plentiful. American ingenuity will need to be set to work on the problem of supplies. The tonnage needed is small in relation to amounts of lime that will be required and, fortunately, phosphates once in the soil leach away only very slowly indeed. Once, therefore, the needed level of phosphate has been restored to the soil, it can be maintained relatively easily by the use of the proper farming systems.

It bears particular emphasis that in nearly every location systems of farming can be devised that will reduce fertility losses to a very small amount, not only of phosphates but of any and all of the fertility elements.

Feasibility of the Program from a Human Viewpoint

Obtaining the needed tonnage of fertilizers may on the whole prove only a moderate obstacle for the effectuation of a program to maximize fertility of lands retained for farming. The human difficulties may prove much more stubborn. At present the nation maintains a sizeable percentage of its population and a great percentage of its farm population on lands so poor that they contribute almost negligibly to the volume of farm production that finds its way into marketing channels. Farmers and their families on these poorer lands live at substandard levels and their labor is by no means effectively used. They constitute in fact the largest group of ineffectively employed people remaining in the nation.

Brewster and Ellickson have given the clearest statistical picture of the number of marginal and inadequate farms in the United States as of the year 1935 during a peace time economy. Out of 6,000,000 farms only 1,400,000 are, according to their tabulations, satisfactory large scale enterprises that provide employment for labor on a level of efficiency suitable in the modern capitalistic economy of the United States. Not all marginal and inadequate farms are located on poor lands though a great percentage of them

are, and there can be no dodging the prospect that maximizing the fertility of the better lands to be retained for farming will call forcefully for a withdrawal of an immense acreage of the poorer lands from farming and, hence, a great reduction in the number of farms and farmers. A much higher level of fertility will increase the efficiency of labor on the better farms and still further depreciate the competitive position of the already poor marginal and inadequate farms.

The need so to shrink the farm acreage of the country is no disadvantage but rather an advantage of the program. The farm area of the United States has for a long time been grossly over extended from the viewpoint of the comparative efficiency (advantage) of the utilization of labor in agriculture as contrasted to urban occupations. Indeed it (farming) needs badly to go through a process of contraction if the nation is to avoid the need for continuous programs of subsidizing farm incomes to bring them to a level more nearly on a par with incomes for other groups in the economy.

A deliberate national program of maximizing fertility would look forward, therefore, to a great concentration of the farming area of the country. Indeed, low cost fertilizers should in the end be available only to farms on lands permanently suited to cultivation. Otherwise the program will be wasteful since the cost of maximizing fertility on poorer lands would be excessive and simply out of the question.

However, since it is not politically feasible to offer (in a democracy) such a program on a selective basis, it will be necessary, to begin with, to grant to all farmers low cost fertilizers and benefit payments for their efforts to improve the lands in their possession despite the fact that initially some of the fertilizer and some of the money will be used on lands that should in time be retired from farming.

Only in a dictatorship can ruthless policies of removing people even from uneconomic locations be prosecuted without much regard for the feeling of the people themselves. In the United States it will certainly be better to let the exodus from the poorer land areas take place slowly and largely, if not wholly, voluntarily. A democracy should adopt policies that are least unkind toward those that are called on to make what are to them great readjustments in their ways of living and such readjustments will be required of many under the proposed program.

There will be, however, some acceptable gains from increased fertility even in unpromising (for farming) locations. In Germany and other central European countries and even in the United States there has been some fertilizing of poor lands for the sake of the added game production that results therefrom. Sometimes there is no other feasible way to increase the game population that an area can maintain. If, therefore, some fertilizer finds its way to uneconomic (in farming) locations in the earlier stage of the program it may, nevertheless, provide some good hunting later.

In order that the abandoning of these poorer lands be accomplished with a minimum of delay, however, the nation must make up its mind on two matters. First, it must reject the contentions of the agrarians who have always in the past had a most important influence in the determination of the nation's policies and, second, it must adopt policies that assure an expansionist full employment economy for the nation.

Agrarians tend to idolize (1) farming as a way of life and (2) farm people for qualities that they believe them particularly to possess. They (the agrarians) want, therefore, a maximized rather than a minimized farm population or as many people on the land as can eke out an existence thereon. In countries such as Italy, France, Germany and, indeed, all central European countries, the influence of agrarian minded men in shaping national policy has been strongly apparent. That is, great efforts to keep people on farms have been characteristic and there has been much less regard for the economic efficiency with which these people can, in the main, employ their labor. As compared to the level of output per laborer in industry in these countries, therefore, the value output per farm worker tends to be low, as it is in the United States.

In this country with the great bulk of its population so recently sprung from pioneer farmer ancestors there is a great sentimental attachment to things agricultural. This fact has played directly into the hands of the agrarians. These have been able, therefore, to exert a strong influence on national policy so that the country has not at any time been able to choose forthrightly whether to follow the dictates of sentiment or those of efficiency in its attitude toward farming. The policies of the New Deal, as I shall point out later, reflect this vacillation.

Developments during the course of the present war have a direct bearing on the nation's controversy with the agrarians, and

make imperative a resolution of the dispute and the adoption of less confused and contradictory policies than those of the past.

The obvious fault with the contentions of the agrarians occurs in connection with their insistence that nations must have many farmers if they are to be strong. A nation's strength is not in any event determined for war or peace by its manpower alone. The strength of the nation must rather be maintained on three fronts, viz., (1) the manpower front, (2) the resources front and (3) the industrial or fabricating front. Following agrarian policies tends to weakness on the latter two of these fronts and has weakened them both in the United States. That is, by tolerating an excessive farm plant the manufacturing establishment of the country has been kept smaller than it might otherwise have been. Similarly a large number of farms on poor lands has led to a great misuse and wastage of resources. Furthermore, the fact that these poorer lands provided so many (poor) homes has made it quite impossible to formulate and prosecute programs for their development and conservation for forest production or for other uses to which they are better suited.

Partly, however, the agrarian philosophy remained powerful in the determination of national policies because the country felt that it could be so complacent in recent decades about its progress industrially. This complacency (about our industrial supremacy) received some rude shocks during the present war. The first shock came from Germany and the Nazis who in a few short years of power built up an industrial machine on resources already badly worn that presented first England and France and later ourselves with a menacingly forceful surprise.

The second shock came on December 7, 1941 when Japan, with a much smaller fear of our industrial supremacy than was believed possible at the time, challenged our might in the Pacific.

The third shock came when the Russians proved to have an industrial plant, developed in a very short period indeed, capable of maintaining first a powerful defense against the Nazis and later of launching a counter attack that by the beginning of 1944 had virtually cleared the aggressors from their borders.

The fourth shock, the nature and extent of which is still far from generally comprehended, came from Russia but also from Asia. Always in the United States we have assumed ourselves to have natural resources so vast as to be unchallengeable by any other

nation or continent. Now that assumption has been challenged. The Russians, for instance, must have tremendous and rich resources if they can equip the largest army in the world with materials good enough to send the heavily armed Hitlerites reeling backward.

Furthermore, Russia's resources and those of the entire Asiatic continent are relatively unworn as compared to our own and those of our allies. The United States has possessed a monumental industrial machine that has been digging greedily into our reserves of natural resources for many decades. We must, therefore, assume that our resources are as worn in spots as, indeed, they now appear to be. Our chief Allies are the 40,000,000 English inhabiting a very badly worn little island. The resources of Russia and Asia are for the most part much less depreciated, though that statement does not apply to farm lands. There is no room whatever, therefore, for any further complacency about the challenge to our industrial supremacy that has arisen nor in relation to our comparative situation on the natural resource front.

Since the United States cannot hope for a population large enough to provide it with manpower at all comparable to that of Russia to say nothing of Asia, it has no choice if its prestige as a most important nation is to be preserved, but to look very sharply indeed to the pace of its future industrial development and its plans for resource improvement and preservation. Agrarians present too limited a program to deserve much place in national councils in the future. A much more balanced program is needed and their contentions should deservedly go to the dust bin.

What is needed is a continuous expansionist full employment economy which alone will permit the utmost pace of industrial development. In addition there is equal and even greater need to embrace a program that will have as its end the preservation and improvement of our recoverable and restorable natural resources. In this picture there is no place for a grossly over extended agriculture such as we have at present. Rather agriculture should be shrunk to the utmost point that is in keeping with balanced farm and industrial production.

The Program as a Set of National Objectives

A program to maximize the fertility of lands to be retained for farming would serve many other more or less well established national ends. The nature and extent of the contribution of the pro-

gram to these other objectives is, indeed, a most promising aspect of the proposal as I shall attempt to show.

Provision for agricultural reserves. The immediate and declared end of such a program is, of course, the rebuilding of fertility reserves so that the nation may be made more secure in emergency in its supplies of food and other agricultural raw materials.

Military or defense ends. War is the only emergency likely to be of sufficient magnitude to make necessary any calling upon the reserves to be established. Wars have become, as history marches by, successively more furious and more destructive. Modern wars, as contrasted to those of ancient times, are less and less waged by men alone and increasingly contests of machines and raw materials. No modern army lives much off the country though armies still march on their stomachs. Success of modern armies is a success of supply and this in turn depends upon production. Production is based flatly upon the supply of raw materials.

Furthermore, wars always deplete the manpower left on the home front so that farms are always called upon in war emergencies to increase output with reduced manpower. Increasing fertility reserves will facilitate such emergency farm production as no other one thing can. It provides to farm production a needed element of flexibility that is lacking almost entirely at present.

The control of inflation. The military ends that are served are, however, one group among many, and have, perhaps, been emphasized out of due proportions in the foregoing. Another end is the control of inflation, an associate of war.

No democratic government in any major war has ever been able to exert sufficient control over (1) the outpouring of purchasing power in behalf of war nor (2) over consumer demands for goods and recourses, to avoid serious inflation. However, anything that makes it possible more quickly to step up production helps just that much to hold prices down. Always in the past it has been most difficult of all to step up farm production. Providing some of the needed flexibility in farm production would, therefore, help in reducing the magnitude of war time inflation.

The improvement of national health and vigor. Over the long period a further end, perhaps transcending the military in importance, that the program would serve is that of improving the level of nutrition for the nation. Since a large percentage of the people of the country still live on substandard diets this improvement would lift the health and vigor of the entire nation.

Raising the fertility of large areas of good farm land would permit a great increase in the output of the farm and would improve the quality of most things produced as well. There needs to be a considerable increase in the production of certain types of foods, particularly of milk, eggs, butter, meat and so on if all people in the country are to have satisfactory liberal diets or diets adequate for health plus a margin. A large percentage and perhaps the bulk of lands now in farms would be needed to produce such a diet (though the acreage of poor lands that could be dropped from farming would also be considerable) but there would certainly be no lack of good land upon which to produce food sufficient to provide for a liberal diet. The nation would, therefore, by such a policy establish a virtually complete control over the nutritional level of the diet of its people, a thing that has never before in history been possible.

As a related matter it is worth noting that in a country in which so much pains and expense are taken to save all children, weak as well as strong, a supplementary program of unusual proportions is needed to provide all children with the greatest possible opportunities to attain a vigorous adulthood. Maximizing fertility of lands retained for farming insures the quantity of food needed for that purpose but, more than that, it insures also the quality of food needed since the best foods come most easily from the best soils.

Facilitating soil conservation. The history of the exploitation of our soil resources in the United States indicates well enough the weakness and unattractiveness of conservation as a specific and independent object both to farmers and to the American public generally. Conservation objectives are excessively long time in nature and for that reason subject to excessive uncertainties.¹ Conservation as such, therefore, will probably continue to get far more grudging support than is actually safe from the viewpoint of long term national survival.

As much as possible, therefore, conservation must be associated with other much more immediate ends preferably of a developmental nature, that is, with the objective a rise in national income or the standard of living, as does this proposal to increase the fertility of lands to be retained for farming. Conservation (in the best meaning of the term) of soils will be accomplished under this program quite incidentally and probably much more effectively than would be possible under the best of programs now in existence.

¹ As I have indicated in an earlier article devoted specifically to this subject. See "Society and Conservation" JOURNAL OF FARM ECONOMICS, February 1942.

The conservational effects of the program would extend, furthermore, far beyond the boundaries of the lands to be retained for farming. That is, while the great acreage of land submarginal for farming would not be affected directly by the program they would, nevertheless, be freed of the chief difficulty that stands in the way at present of developing them for other uses. This difficulty has been the thousands of farms and farm families living, at whatever substandard levels, on such lands. The anti-conservationist commonly makes his chief stand against developmental programs for such lands on the point that such farm families are "happy" (though admittedly poor in comfort, health and culture) and therefore he insists that they not be disturbed on any account.

Fortunately people move away from such locations readily and a program of increasing the fertility of the better farming land would (assuming a full employment expansionist economy) facilitate the exodus, thus robbing the anticonservationists of one of the last of their major arguments. More effective developmental programs for these submarginal lands will then be possible so that the restoration of forests, game and fish and the improvements of such lands for recreation can proceed more rapidly. Conservation for these lands too must be achieved largely incidentally to their development.

Balancing of efficiency and security. Under the stimulus of depression and unemployment there developed in American society in the thirties a great drive for security. For the moment the drive for security transcended rather completely the drive for efficiency though this latter drive had, heretofore, always had a higher rank among Americans. These had in the past for the most part taken their security for granted believing that the best of security is an abundance of opportunities for employment.

The New Deal program for agriculture seized upon the drive for security and made altogether too much of it. The drive for security often if not universally hampers or checks the drive for efficiency and it is possible to create for farm people (and for others) such a shield of security that they lose some of their ardor for efficiency. The New Deal made some progress along just such a path in a number of its farm programs but nowhere so much so as in the program designed for and carried out by the Farm Security Administration. This agency accomplished so much good in so humanitarian a manner that it is painful for me to offer any criticism of it.

Yet the Farm Security Administration poured out large sums to help thousands of farm families to move to or remain in sub-marginal locations. The justification offered by its designers that not much else could be done in a period of industrial stagnation is simply not enough since stagnation has not been, is not and must not be the characteristic economic condition in the United States. The country must not, therefore, develop an emotional attachment for agencies and institutions that thrive on stagnation. If the Farm Security Administration has a place it is a different one from that which it now fills.²

A program to maximize the fertility of lands permanently to be farmed will help redress the present unbalance of the twin drives for security and efficiency. Such a program will seek to shrink agriculture from its present over extensions to such proportions that the value output and income of farm workers compares more favorably with the value output of workers in other industries. The program of the New Deal has tended, on the whole, to increase the number of farms and farmers. Economic efficiency is better served by progress in an exactly opposite direction.

National ends and unity. The New Deal program for agriculture has, however, another related and even deeper fault. It sets up farmers as a group apart from others, marking them for special attention and is, therefore, divisive in its effects. A divisive program or policy detracts from national unity, a thing that few nations can afford even when the immediate ends to be served have great merit.

The immediate end that the New Deal sought was in this case the raising of farmers income by a program of subsidies. Attempts were made to sweeten the program for public acceptance by claims (1) that raising farm incomes would be good for business and labor and (2) that the interests of consumers would also be served. These other groups (consumers, business and labor), however, never fully accepted these claims as valid³ and there developed as a consequence much bitter criticism of New Deal farm programs. In effect, therefore, these programs tended to emphasize conflicts of economic interest out of proportion to their actual weight and to

² I have suggested what the program for the Farm Security Administration should be in a period of full employment in an earlier article. See "The Land Tenure Ideal," *Journal of Land and Public Utility Economics*, Feb. 1943.

³ Rightly, I believe, as I have attempted to show in an article, *Agriculture in an Expansionist Economy*. *JOURNAL OF FARM ECONOMICS*, February 1943.

make the nation more conscious of these conflicts than it had ever been in the past.

In a nutshell the New Deal program for agriculture has not served farmers incidentally by a program undeniably national in its objectives. Rather the program was unmistakably one for farmers with *national* ends incidental and supplementary.

Programs the effects of which are divisive are not the highest products of statesmanship since unity is so necessary and so difficult to achieve and maintain. A program to achieve a better balance between farm and non-farm incomes while seeking such genuinely national ends as the creation of adequate agricultural reserves for military and defense purposes, the checking of inflation, the improving of health and vigor by lifting the nutritional level and the enhancement of programs for efficiency and economy is, on the other hand, harmonious with the maintenance of national unity.⁴

Mechanics of the Program

Creating the organization to carry on such a program and providing the mechanics under which it will best function would be a relatively easy matter in a country where organizing genius is as abundant as in the United States. Furthermore, the step from present New Deal programs to the one proposed is far more evolutionary than revolutionary. The whole emphasis on objectives would be different but in other respects it is mere adaptation that would be required. There has in fact been a discernible drift in New Deal agricultural policies in the direction of just such a program as is herein suggested as those acquainted with the facts will recognize.

The program would, or at least could, have three great administrative advantages over the existing agricultural program. First, it would be a simpler program oriented toward a single unimpaired objective which would permit a simpler organization. Second, the objective of the program would be a stable one so that a stable organization functioning in a stable manner would be possible. The contrasting turmoil of the New Deal program has become a by-word. Finally, the proposed program could easily be made to have the needed flexibility. Fertility need not be maximized in a day or

⁴ The existing agricultural program, its genesis considered, is, from this viewpoint, an unfortunate fact. Americans are going to find it difficult to believe from now on that any program for agriculture will be based solely upon ends that are truly national.

decade or even in fifty years. During depressions the pace could be stepped up to give jobs to the unemployed and to permit farmers to earn larger payments during a period of low demand and low prices. At other times, for whatever reasons proved imperative, the pace could be slackened.

Because of the stability and relative permanence of the program the administrative organization and the needed procedures can be worked out over a period. Probably, however, a clean break with the past would be desirable. Without such a clean break the public is sure to continue regarding the new program as one for farmers (class objectives) only, with national objectives as subordinate as in the present program.

A new statute and a new administrative organization would provide the needed clean start, but in any event there must be emphasized in such statute the inner character of the program as one for the nation rather than for farmers alone. The public should be given a clear comprehension of the objectives sought and the usefulness of the fertility reserves for military or defense purposes, as well as their significance for health and nutrition, inflation control, conservation, efficiency and a rising standard of living. There need be no detracting from present objectives of redressing the unbalance of farm and non-farm incomes. There would be much to be gained by the nation in achieving a better balance in this respect.

Parts of the existing New Deal program for agriculture could be absorbed almost intact into the new organization. Others could not. The program would need to be entirely dissociated, for instance, from such things as parity prices, crop insurance, the Farm Security Administration program and the like. The Ever Normal Granary program would more nearly fit and the Commodity Credit Corporation could be absorbed to help in building the same stock piles of corn, wheat, cotton and so on that proved such remarkable assets in the present war emergency.

Appropriate functions and parts of the present Agricultural Adjustment Administration as such would be entirely suitable for absorption, and the Soil Conservation Service should be entirely absorbed by the new agency. Much highly trained and experienced personnel would be available in existing agencies or a great potential asset to the new.

The main techniques needed to effectuate the program are reasonably easy to outline. First would be the provision for fertilizers

at cost or less for all farmers who participated in the program. Second, there would be a schedule of payments for a whole range of soil building practices much as in the present program. Such payments would be designed so as to provide powerful incentives to rebuild the soil and land.

Needless to say such a program would or could greatly increase the production of farm products. Much of this would be used to improve the nutritional level of the nation but as a counterbalance there would be required the maintenance of increased acreages in legumes and in grass. These would aid in improving fertility and would also be the basis for the improvement of the diet (as the volume of livestock production increased), and would be used to check the production of excessive amounts of cereal crops that might otherwise result. Thus the higher the level of fertility rose the greater would be the required acreages of legumes and grasses and these acreages would provide a rough measure of the reserves that could be made available in the emergency.

The quid pro quo that the government and the public would exact for the low cost fertilizers and payments for soil improvement would be (1) the agreement on the part of each farmer to operate his farm in such a manner as to facilitate the rebuilding of the soil and the preservation of the fertility once rebuilt and (2) an agreement to reverse the process and to farm in as exploitative a manner as might be required in case of emergency.

There would be some resistance to plowing up land during emergencies, just as there has been in England, but in emergencies government seldom has much trouble in getting the needed cooperation. Furthermore, the demands and higher prices of such emergency periods will provide incentives to the farmers to turn to exploitative practices at just the proper moments.

A great deal more indeed might be said about the mechanics of the program but enough has been outlined to point the way. What is needed now is a careful examination of all aspects technical, economic, social and political of the proposal by competent specialists to determine whether it is as feasible and as potentially valuable to the nation as I believe it to be.

NOTES

A STUDY OF FARM LABOR IN TWO YEARS OF WAR¹

KANSAS farmers, aided by favorable weather conditions, attained record production of agricultural products in 1942 and 1943 in spite of considerable difficulty regarding their labor supply. To provide information which might aid in directing a labor program during the remaining period of war, a farm labor survey was made in the late fall of 1943.² The purposes of the survey were to find out the sources of farm labor, characteristics of the workers, rates of pay, and other information.

There were 6 percent fewer workers (excluding farm operators)³ on Kansas farms in 1943 than in 1942 and these workers averaged two days less work in 1943. Also the workers were relatively less capable in 1943, consisting of more women, youths, and old men. Still, the farms in the sample were 2.5 percent larger in 1943. However, the yield of wheat was 25 percent less in 1943 than in 1942 and more of the grain was hauled directly to elevators, thereby reducing the labor required. In 1943 less time was lost during harvest because of unfavorable weather and breakdowns.

Two-thirds of the farm workers (excluding operators) were hired workers, one-sixth exchange workers, and one-sixth farm family workers in 1942. The percent hired decreased from 1942 to 1943 and the percents of the other two classes increased. In 1942, two-thirds of the farm workers lived in the county in which they worked, one-sixth lived out of the county but in the state, and one-sixth came from out of the state. There was a decrease of about 30 percent in the number of workers coming from out of the state. This was offset in part by an increase in the number of workers living in the county. These facts indicate the greater dependence on local labor, particularly family and exchange labor, in 1943.

In eastern Kansas about one-third of the workers were exchange workers while in western Kansas such workers represented less than

¹ Contribution No. 122 from the Department of Agricultural Economics.

² This survey was made cooperatively by the Kansas Agricultural Experiment Station and the Kansas Extension Service. Questionnaires to obtain labor information for 1942 and 1943 were mailed to a sample of farmers in each county of the state. There were 1,902 schedules used in the summary and analysis. The farms included in the sample were larger, on the average, than the general average of farms of the state. The sample may not be entirely representative in other respects; however, emphasis was placed on changes from 1942 to 1943 and the relative labor situation in different parts of the state. Emphasis also was on harvest labor for small grains.

³ The statements in this paper refer only to the farm workers other than the farm operators.

10 percent of the total. The farms in eastern Kansas are smaller and more diversified and the farm jobs are more suited to the use of exchange labor. In eastern Kansas the farmers reported more than one-third of the small grain bound and threshed while in western Kansas less than 5 percent was bound and threshed. Threshing jobs frequently are done with exchange labor. On the other hand, western Kansas farmers depended upon out-of-state sources for 25 percent of their workers, while in eastern Kansas less than 5 percent came from out of the state. Lack of migrant labor, therefore, is a more serious problem in western Kansas. Migrant workers who follow the small grains harvest from south to north in the Great Plains usually are attracted to western Kansas because of the large wheat farms, use of machinery, and high wages.

While women and girls represented only a small part of the total number of farm workers,⁴ there was a 50 percent increase in this type of workers from 1942 to 1943. About 75 percent of the women and girls were wives or daughters of the farm operators. A larger proportion of the women and girls were reported as satisfactory than the proportion of other workers. Two-thirds of the jobs performed by the women and girls consisted of driving tractors, operating combines, hauling grain, and handling other machines. Hauling grain was the most frequently mentioned job for women and girls.

Youths less than 18 years of age and men in the older age group represented a larger proportion of the farm workers in 1943 than in 1942. In 1942, 50.9 percent of the workers (excluding farm operators) were in the draft age, 18 to 37 years inclusive, while in 1943, 48.5 percent were in this age group. This decrease occurred in spite of the farm deferments resulting from the Tydings Amendment to the Selective Service Act in November 1942. The average age of the farm workers increased about two years in eastern Kansas, while in central and western Kansas the average ages were nearly the same for the two years. In 1943 the average age was more than five years older in eastern Kansas than in western Kansas.

The average wage rate in 1942 was \$5.17 a day and in 1943 was \$6.18.⁵ The modal wage class in 1942 was from \$5 to \$5.99 and in 1943 was from \$7 to \$7.99. In 1942, 2.2 percent of the workers received \$10 or more, while in 1943, 8.8 percent received \$10 or more.

⁴ About 4 percent of the workers were women and girls in 1942 and 6 percent in 1943. It was felt that the farmers were reluctant to report that their wives and daughters worked on the farm. Hence, these figures are low.

⁵ These averages include primarily harvest wages. The rates for all workers were included in the averages. Women and youths received lower wages than the men. Monthly wage rates as reported were reduced to rates per day. No information was obtained regarding board or other items furnished the workers.

The average wage in western Kansas was nearly twice the average in eastern Kansas. Low farm wage rates at the beginning of the war were an important factor causing many workers to leave farms for jobs in industry. The rates reported indicate that this situation is being corrected.

Less than 15 percent of Kansas farm workers (excluding farm operators) in 1942 and 1943 were not farm reared. The proportion not farm reared varied from 5 percent in eastern Kansas to 20 percent in western Kansas. This is consistent with the greater use in western Kansas of hired labor coming from out of the state. Under the heading "usual occupation" about two-thirds of the farm workers were classed as farmers. Others were classed as laborers, houseworkers, and school boys probably having some farming experience. Farming was given as the usual occupation for a larger proportion of the workers in eastern Kansas. This also is consistent with the larger proportion of the workers coming from farm families and exchange labor in eastern Kansas.

This survey, therefore, indicated a downward trend in the number, experience, and capability of farm workers in Kansas. In 1944 and for the duration of the war farmers will have to depend more on labor from local sources—labor from within the farm family and labor exchanged with the neighbors. A shortage of hired labor will be felt most by western Kansas farmers who have been accustomed to hiring a larger proportion of their labor than have eastern Kansas farmers. Recruits for farm work will have to consist largely of women, youths, and old men. Urban people who may have a few days during a vacation or who can make adjustments in their usual work to permit them to help can be of great assistance in the food production program. Many of these prospective workers will not be experienced farm workers and therefore will need training. Special short courses or training schools such as tractor-driving schools for women will assist farmers in developing satisfactory farm workers. Farmers will continue to have the main responsibility of obtaining and training farm workers. It will be essential to make arrangements well in advance for workers needed on the farm. Farmers will get the most from their limited supply of labor by making proper adjustments in the farm organizations and practices and by carefully planning the jobs to be done. The survey showed that those farmers who realized these facts were meeting their labor problems most successfully.

W. H. PINE

PRODUCTION FUNCTIONS DERIVED FROM
FARM RECORDS*

THE production functions described in this study have been derived from business records of 468 Iowa farms for the calendar year 1939. Operators of these farms were members of Iowa Farm Business Associations.¹ Their records give a complete account of cash farm expenditures and receipts and also yield some indication of changes over time in the value of such capital agents as land and improvements. The average value of the assets of these farms is considerably larger than that of the average Iowa farm, and operators of these farms had incomes considerably in excess of average Iowa farm incomes.

The 468 farms have been divided into five types—dairy, hogs, beef feeders, crops and general—according to the ways in which their incomes were derived. Gross profits (X) have been taken as a measure of total product. The productive agent land (A) is measured by the number of acres in the farm. Labor inputs (B) are measured by the total number of months of labor—hired labor as well as the labor of the operator and his family. The other inputs were classified into the categories of farm improvements (C) (buildings, fences, etc.), liquid assets (D) (livestock, feed, seed, fertilizer, etc.), working assets (E) (farm machinery, including the farm share of the auto, breeding stock, equipment other than buildings and fences used in producing livestock, etc.), and cash operating expenses (F) (equipment repairs, fuel, oil, feed purchased).

The productive agent management has been excluded since there is no satisfactory index of inputs of this factor. Using the number of acres in the farms as a measure of inputs of land ignores variations in the quality of the land. Measuring inputs of labor in terms of months of labor also ignores variations in the quality and intensity of labor, particularly that of the operator and his family. The value of farm improvements is somewhat arbitrary in that it is determined largely by the appraisal of the operator and the field man

* Journal Paper No. J-1227 of the Iowa Agricultural Experiment Station, Project 730.

¹ Iowa Farm Business Associations are groups of farms whose operators keep records of their farm businesses. Operators are visited periodically by a field man who aids in summarizing the records and often makes suggestions relative to the organization of the farm enterprise. See J. A. Hopkins, *Twenty-One Years of Farm Records*, Research Bulletin 309, Iowa Agricultural Experiment Station, Ames, Iowa, 1942.

supervising the records. Although these values may be somewhat inconsistent with values of farms not in these associations, they are consistent between farms within the association. The categories of variables are not in all cases clear-cut, but yield some indication of the results which may be obtained from the application of this procedure to the derivation of farm production functions.

As a regression equation a function which is linear in the logarithms has been used. This is similar to the production function employed by Paul Douglas in his empirical studies.² Such a function implies substitutability between the various productive agents. In addition to the fact that this function fits the data reasonably well, this form of function has been chosen because (1) the regression coefficients are the elasticities, i.e., they indicate the percentage changes in output which will on the average result from a one percent increase in the input of the various factors; (2) it permits the phenomena of diminishing marginal returns to come into play without using as many degrees of freedom as would be required by a quadratic function; (3) such a logarithmic transformation of the variables will presume to a substantial degree normality in the distribution of the errors in the data (assuming that such errors are small and normally distributed). Even though the errors are not independent and are not normally distributed, one still obtains the best linear estimate of the regression coefficients by using the method of least squares, although tests of significance are no longer reliable.

The Statistical Results

The multiple-correlation coefficients are presented in table 1. All are statistically significant. The adjusted coefficients of multiple determination are also presented in table 1. These coefficients show the percentage of the variance in the dependent variable which on the average is associated with the independent variables.

For all of the 468 farms, approximately 74 percent of the variation in gross profits is "explained" by the factors included in the analysis. The adjusted coefficient of multiple determination is highest for general farms and lowest for beef feeders.

The regression coefficients are presented in table 2. They are elasticities of the product with respect to the factors of production,

² See, for example, Paul H. Douglas, *Theory of Wages*, New York, The Macmillan Co., 1934, and Harold T. Davis, *The Theory of Econometrics*, Bloomington, Indiana, The Principia Press, 1941, pp. 150 ff. and the literature cited on p. 159.

TABLE 1. MULTIPLE CORRELATION COEFFICIENTS

Type of farming	Size of sample	Multiple-correlation coeff.	Adjusted coefficients of det.
Hog	234	0.8629*	0.7379
Beef feeder	124	0.8218*	0.6587
Dairy	32	0.8922*	0.7472
Crops	58	0.8997*	0.7670
General	20	0.9410*	0.8326
Total	468	0.8615*	0.7389

* Significant at 5% and 1% levels.

and show the average percentage change in the product if the input of a factor of production is increased by one percent. For example, the regression coefficient of the logarithm of land on the logarithm of the product in hogs is 0.2229. Hence, an increase in the amount of land by 1 percent is associated with an increase in the product by 0.22 percent, on the average.

TABLE 2. REGRESSION COEFFICIENTS (ELASTICITIES)

Type of farming	Land A	Labor B	Improvements C	Liquid assets D	Working assets E	Cash operating expenses F	Sum
Total	0.3434*	0.2364*	0.0431	0.1729*	0.0795	0.1118*	0.9871
Hogs	0.2229*	0.2272†	0.0387	0.2568*	0.0617	0.1393*	0.9466
Beef feeder	0.3983*	0.2995†	0.0753	0.2380*	-0.0551	0.0396*	0.9956
Dairy	0.2728‡	0.0099	0.0097	0.2314	0.0923	0.2657‡	0.8818
Crops	0.5114*	0.3825†	0.0595	-0.1036	0.0880	0.1266‡	1.0644
General	0.4742‡	-0.1909	0.0082‡	0.3101	0.1437	0.2166‡	0.9619

* 0.1%—

† 1 %—level of significance.

‡ 5 %—

Negative elasticities, within the range of inputs on most farms, are meaningless. It seems unlikely that production should actually decrease if certain factors of production are increased. Some negative elasticities are presented in table 2, but none is statistically significant, even at the 5 percent level of significance. Thus, the hypothesis that each one of the negative elasticities is zero is not rejected by analysis of the data.

All of the elasticities obtained in this analysis are smaller than unity. Hence, marginal returns for each factor of production are

diminishing. Holding all other factors constant, the marginal returns of each factor will decrease as more of the factor is used in production.

The sums of the elasticities for each type of farming and for all farms are presented in the last column of table 2. If this sum is smaller than one it indicates decreasing returns to scale; if it is equal to one it indicates constant returns to scale; and if it is larger

TABLE 3. ESTIMATED MARGINAL PRODUCTIVITIES (PER DOLLAR OF INPUTS) AND FIDUCIAL LIMITS (AT THE 5 PERCENT LEVEL)

	Land A	Labor B	Improvements C	Liquid assets D	Working assets E	Cash operating expenses F
Total						
Mean	0.0981	0.0877	0.0449	0.1790	0.1585	0.2808
Upper Limit	0.1188	0.1236	0.0923	0.2433	0.2898	0.3941
Lower Limit	0.0775	0.0518	-0.0025	0.1137	0.0272	0.1675
Hogs						
Mean	0.0621	0.0793	0.0379	0.2650	0.1190	0.3417
Upper Limit	0.0909	0.1307	0.1026	0.3703	0.2854	0.4989
Lower Limit	0.0333	0.0279	-0.0268	0.1597	-0.0474	0.1845
Beef feeders						
Mean	0.1341	0.1236	0.0814	0.1988	-0.1153	0.0824
Upper Limit	0.1792	0.2024	0.1889	0.2980	0.2064	0.2749
Lower Limit	0.0890	0.0448	0.0271	0.0996	-0.4371	-0.1101
Dairy						
Mean	0.0836	0.0301	0.0085	0.3258	0.1641	0.9018
Upper Limit	0.1635	0.1240	0.2141	0.6855	0.5586	1.5800
Lower Limit	0.0037	-0.0638	-0.1971	-0.0339	-0.2304	0.2236
Crops						
Mean	0.1381	0.1584	0.0077	-0.1419	0.1902	0.4404
Upper Limit	0.2022	0.2575	0.0216	0.0947	0.5703	0.8661
Lower Limit	0.0740	0.0593	-0.0062	-0.3785	-0.1899	0.0126
General						
Mean	0.1322	-0.0735	0.0106	0.3662	0.2989	0.5783
Upper Limit	0.2216	0.1282	0.2264	0.6414	0.8501	1.0928
Lower Limit	0.0428	-0.2752	-0.2052	0.0910	-0.2523	0.0638

than one there are increasing returns to scale.³ All types of farming except crops show decreasing returns to scale. This means that an increase in the inputs of all factors of production by a given percentage will increase the product by less than this percentage. Such a result is to be expected, particularly since management has not been included in the analysis.

The marginal productivities are estimated in table 3. These indicate the returns which might be expected on the average from the addition of one dollar's worth of the various productive agents. The marginal productivities are estimated at the geometric means

³ G. Stigler, *Production and Distribution Theories*, New York, 1941, pp. 320 ff.

(see table 4). Their values are derived from the elasticities and for land and labor depend also upon the dollar values selected for inputs of these factors. The value of land was taken as \$79 per acre (the average value of Iowa farm land in 1939, as estimated in the 1940 census) and the yearly wage as \$600. In addition to the marginal productivities, their upper and lower limits (at the 5 per cent level of significance) are presented in table 3.

Some Further Economic Interpretation of the Results

The results presented in table 2 are about what one would expect to find. The largest elasticity with respect to land is in the production of crops. With respect to labor the largest elasticity is also for crops. Labor shows a small elasticity in connection with dairy

TABLE 4. GEOMETRIC MEANS

Type of farming	Land (acres) A	Labor (man months) B	Improvements (dollars) C	Liquid assets (dollars) D	Working assets (dollars) E	Cash operating exp. (dollars) F	Gross profits X
Hog	215.2	22.63	4,845	4,592	2,458	1,932	9,739
Beef feeder	281.7	27.19	6,227	8,160	3,168	3,235	6,735
Dairy	196.8	26.09	5,413	3,383	2,678	1,403	4,761
Crop	272.5	23.41	4,520	4,244	2,692	1,671	5,816
General	230.6	21.96	4,229	4,298	2,441	1,902	5,077
Total	237.3	24.06	5,143	5,171	2,635	2,127	5,353

farms, a somewhat unexpected result. None of the elasticities with respect to improvements are significant, except for general farms. The elasticity with respect to liquid assets is largest for hogs and is also relatively large for beef feeders and dairy farms. Working assets and cash operating expenses have the largest elasticities in dairy farming.

Although the factor management is excluded, returns to scale are decreasing in each type of farming except crops. However, if it were possible to include management, it might be found that returns to scale were constant or even increasing in all of the various types of farming.

Of perhaps greatest interest are the marginal productivities presented in table 3. It should be again emphasized that these apply only to changes in the inputs of the various factors at the geometric means. The geometric means are presented in table 4.

For all types of farms included in this analysis, the marginal

productivity of cash operating expenses is highest, while that of liquid assets is next largest. Investments in improvements, on the average, have the lowest marginal productivity. The marginal productivities of land and labor are approximately equivalent. These results indicate that these farms are on the average over-improved, and that additional inputs of liquid assets and working assets, and additional cash expenditures on equipment repairs, fuel, oil and feed will probably yield higher returns than additional improvements. The fact that on the average cash operating expenses (repairs, fuel, oil, feed, etc.) have a higher marginal productivity than working assets (equipment, horses, breeding stock, etc.) may indicate that on these farms equipment is replaced before it has depreciated to the most economical point. Even though expenses for gas, oil, repairs, etc., are increased as the machinery ages, additional expenditures on these items rather than replacement of the machinery would yield higher returns to the operator.

The marginal productivity of land is highest for farms whose principal source of income is crops and lowest for farms whose principal income comes from hogs. Labor shows the highest marginal productivity for crops farms and for dairy farms. Although on general farms and dairy farms the marginal productivity of liquid assets is higher than it is on any of the other types of farms, considerable variability over time in the marginal productivity of this factor is to be expected.⁴ This variability may arise because of changes in the value of these assets within the year. Greatest variability over time in the marginal productivity of liquid assets probably will be found in such types of farms as beef feeders.

It should be remembered that these results are not typical for Iowa farms and that they apply only to one year. They describe the conditions of production only on these farms, although these results may represent the upper part of the production function for all Iowa farms.

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⁴ In a similar analysis of farm records for the year 1942, the elasticity with respect to liquid assets was highest for beef feeders. See Gerhard Tintner, "A Note on the Derivation of Production Functions From Farm Records," *Econometrica*, Vol. 12, No. 1 (January 1944), pp. 26-34.

THE RELATION OF WAGES TO NET FARM INCOME,
1929-42 AND 1939-42*

THE BUREAU of Agricultural Economics of the USDA has just released a "preliminary draft for review" of some estimates of farm expenses and net farm incomes by states¹ and has asked for suggestions of needed revisions. The lack of data on net farm income has been acutely felt ever since the gross farm income estimates were published by states in the late twenties. But the Census has never collected data on more than a few items of farm expense, and the data from other sources are far from adequate. Approximate though these estimates may be, they will prove to be of great value in use, and Dr. Stine and his associates are to be congratulated on their undertaking.

The best way to test the reliability of preliminary data is to put them to use. This note represents an attempt to use these state net income data as criteria for judging the present levels of farm wages in the different states. The question posed is whether farm wages in the different states have risen as much or more than net farm incomes. Other possible criteria are cash farm marketings and prices of farm products. Theoretically, net farm incomes should furnish the best standard. Do they prove to do so in terms of these preliminary estimates? Unfortunately the net farm income series have been compiled by states thus far only for the years 1929 and 1939-42. They are particularly needed for 1943.

The subject of the relative level of farm wages is not without interest in itself. Much interest in fixing of agricultural wages has developed recently. As the statutes have stood in the past two years, the Director of Economic Stabilization could have undertaken to freeze farm wages at any time. In a limited number of areas, wage boards have actually set ceiling wage rates. The Director of Economic Stabilization offered as his reason for not freezing farm wages, at the time he was first assigned responsibility for farm wage levels, that farm wages were still low relative to farm prices. But since then they have advanced faster than farm prices and many farmers have protested.

Table 1 introduces a series of comparisons of farm wage rates and other increases since 1939 and since 1929. Although farm wage rates

* The research on which this article is based was financed by the Committee on Research in the Social Sciences of Harvard University.

¹ Harry C. Norcross, *Estimates of Expenses and Net Income from Agriculture*, Washington, May, 1944.

TABLE 1. CHANGES SINCE 1939 AND SINCE 1929 IN FARM WAGES AND NET FARM INCOMES, AND OTHER RELEVANT DATA

	Percent Change since 1939				Percent Change since 1929			
	1939	1942	1943	April '44	1929	1942	1943	April '44
Farm wages	100	163	215	237	100	112	148	162
Net farm income	100	225	295		100	165	218	
Difference		-62	-80			-53	-70	
Farm prices	100	167	202	206	100	107	129	132
Difference		- 4	+13	+31		+ 5	+19	+30
Cash farm marketings	100	196	244	274	100	137	170	191
Difference		-33	-29	-37		-25	-22	-29
Physical volume of sales	100	117	121	133	100	128	132	145
Production expenses less wages	100	162	174		100	140	150	
Prices paid for producer goods	100	122	134		100	101	111	
Volume of producer goods	100	133	130		100	138	135	
Taxes, interest and rent	100	142	156		100	99	109	

rose 13 percent more than farm prices in 1939-43, they had risen 29 percent less than cash farm marketings, and 80 percent less than net farm income. The series in the lower section of the table show why the lag of wages behind net farm incomes is greater than it is behind cash farm marketings. Direct production expenses, not including wages of labor, advanced only 74 percent while cash farm marketings advanced 144 percent. The increase in direct production expenses was due about equally to the rise in cost of producer goods and to the increase in volume of such goods used. If these data on physical volume of sales and of producers' goods are to be taken seriously, a 21-percent increase in the farm output for the market made use of a 30-percent increase in output of farm equipment and other supplies. However, these figures are only as accurate as the series on cash farm marketings, production expenses and prices, since they are nothing more than derivatives from them. (Volume = Value ÷ Price.) It is worth noting, perhaps, that Mr. R. D. Jennings of the BAE in his last summary of the feed situation reports an 11-percent increase in the amount of feed consumed per unit of livestock product. This unit increase multiplied into the increased output of livestock products could easily give more than a 30-percent increase for the livestock part of our increased agricultural output.

The other items in farm expenses—interest, taxes, and rent paid to landlords—rose less in the aggregate than direct production expenses, and all of the increase and more was in the rent item.

The measurement of these changes from 1929 rather than 1939, in the righthand section of Table 1, is included because 1939 is, because of its abnormality, a poor year from which to measure agricultural change, and the period 1925-29 has been found to exhibit relatively normal relationships within agriculture and between agriculture and industry.² The amounts of all the increases, except those in physical volume, are reduced, but the lags of farm wages behind net farm income and cash farm marketings are virtually the same as in the other part of the table.

Relationships by States

Now that we have seen how the national averages for net farm income and farm wages have behaved in relation to each other and to other related series, we are in position to observe and interpret the behavior of the state averages. Figure 1 indicates by states the extent to which the relatives for farm wages fell behind those for net farm incomes on a 1939 base (upper figures) and the same on a 1929 base (lower figures).

The geographic pattern of change, although erratic at first glance, has a good deal of consistency. The lag in wages is very large in the North Central states because of the great increase in income from livestock production in this region. In the New England states, wages have advanced faster than net farm incomes, in large part because of the steep rise in the cost of the purchased dairy and poultry feeds. New York, New Jersey, Pennsylvania, Ohio, and Michigan are intermediate in varying degrees between the two regions named. The Southern states show the least lag of any major region when the base is 1939. Net farm incomes have not risen so much in these states, because volume of output has not expanded so much, and also because prices for cotton have not risen so much as most others. The border states are intermediate between the South and North Central states. On the 1929 base, however, the gain in wages in the Southern states is much more nearly in line with that in the North Central states. The great Plains states mostly show a large lag because they were suffering from severe drouth in 1939 and have had unusual rainfall since. Back in 1929, these states were suffering from a wheat surplus. The same is true, but in lesser degrees of the Mountain states.

² Black, John D. and Gibbons, Charles A. "The War and American Agriculture," *Review of Economic Statistics*, February 1944.

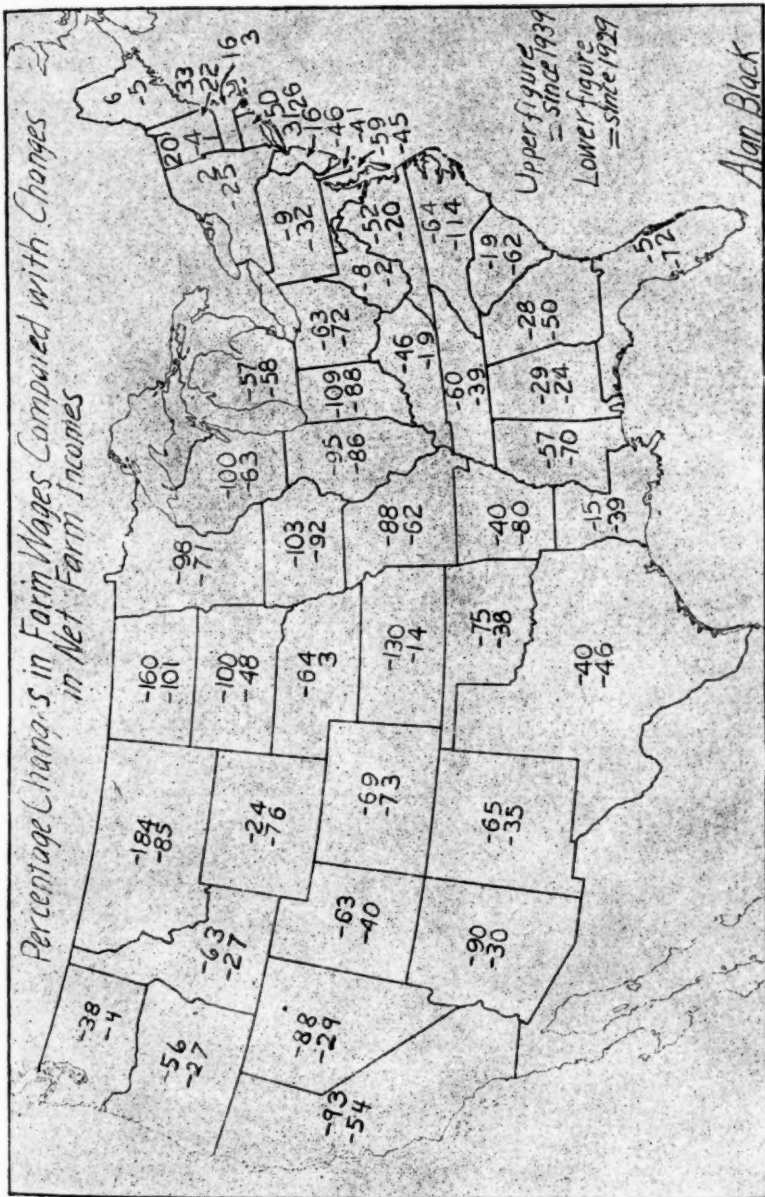


FIG. 1. WAGE INCREASES IN RELATION TO NET FARM INCOME BY STATES.

As examples of states that seem to have a pattern of their own, may be mentioned California and North Carolina—here high net farm income is the reason; Washington and Alabama—severe competition from war plants; Delaware—a big increase in broiler production since 1929 and more since 1939; Nebraska—must have had poor crops in both years.

It is clear from the above showing that base periods of several years are needed for a thorough testing of these net income figures;

TABLE 2. CHANGE IN FARM WAGES, 1925-29 TO 1941, 1942 AND 1943, COMPARED WITH PER-FARM CHANGES IN CASH FARM MARKETINGS AND NET FARM INCOMES—SELECTED STATES

	Cash Farm Marketings			Net Farm Income	
	1941	1942	1943	1941	1942
Connecticut	— .5	— 3.9	—20.3	15.6	25.6
Pennsylvania	—19.3	—28.8	—30.1	—19.5	— 32.4
Illinois	—28.6	—54.0	—59.6	—36.9	— 85.7
North Dakota	— 5.5	— 9.7	—11.2	—49.2	—100.9
Washington	2.7	5.5	30.7	1.6	— 4.4
California	—33.2	—48.1	—53.3	—32.1	— 53.9
Colorado	— 7.8	—25.5	—28.7	— 1.6	— 73.3
Texas	—19.8	—26.6	—18.5	—22.8	— 46.5
Kentucky	—25.0	—48.9	—58.3	— 3.0	— 18.7
Alabama	—12.7	—28.0	—27.1	—15.2	— 24.1
Mississippi	—25.5	—25.9	—31.2	—33.1	— 70.5
South Carolina	—21.7	—53.2	—57.0	— 7.9	— 61.6
North Carolina	—35.6	—74.7	—74.0	—56.0	—113.8

also that in any single year since, the net farm income series may be out of line because of special crop and price conditions. Table 2 throws some light on this aspect of the subject and also on the effect of using net farm income instead of cash farm marketings as a criterion of farm wages. In Illinois, North Dakota, Colorado, Texas, Mississippi, and North Carolina, the lag in wages in 1942 is much the greater measured against net farm incomes than against cash farm marketings. This means mostly that gross farm income increased more rapidly than farm expenditures in these states. In Connecticut, wages have run ahead of net farm incomes, but not cash farm marketings. This tends to be the case in all New England states. In Pennsylvania, California, Alabama and South Carolina, the lag is about the same according to the two standards. Washington showed no wage lag according to either in 1941-42. Kentucky shows the more lag against cash farm marketings.

Table 3, by showing the details for three typical states, makes clear why net incomes indicate larger lags than do cash farm marketings in many states. Gross farm incomes rose much more than expenses in all three of these states. Note the falling off of tax and interest payments, especially in North Dakota.

Some readers may be interested in seeing these relationships stated in more formal terms. Figure 2 shows the regression lines for cash farm marketings and net farm incomes separately. As noted elsewhere; farm wages when compared with 1925-29, have not

TABLE 3. GROSS AND NET FARM INCOME PER FARM, 1929 AND 1942,
FOR THREE STATES

	North Dakota		Illinois		Mississippi	
	1929	1942	1929	1942	1929	1942
Gross farm income	\$3190	\$5022	\$3280	\$5315	\$974	\$1430
Expenses						
Current operations	858	1447	1010	1762	221	265
Maintenance and depreciation	419	392	349	420	54	65
Hired labor	452	454	294	285	27	60
Taxes and interest	392	190	344	246	64	45
Total	2121	2483	1997	2713	366	435
Net farm income	1069	2539	1283	2602	608	995

risen anywhere nearly as much as when compared with 1939. This is because they were already higher in 1925-29 than in 1939 as judged by both marketings and net incomes. As compared with 1925-29, the rise in wages is about as much in line with net incomes as with marketings. But not so as compared with 1939; because, as already pointed out, farm expenditures have not risen as rapidly as gross farm incomes.

The coefficients of correlation accompanying these regressions are not very high, in part no doubt because of special factors affecting net farm incomes and also wages, but no doubt in part because of errors in some of the State estimates.³ The states in which competition with war industries has been strongest appear well above the regression lines. Given reasonably adequate net farm income estimates, regression lines so determined should be of considerable

³ From 1939: cash farm marketings, +.66
 net farm income, +.69
 From 1929: cash farm marketings, +.26
 net farm income, +.57

assistance in judging wage levels in particular states, but careful attention would have to be paid to special circumstances of time and place.

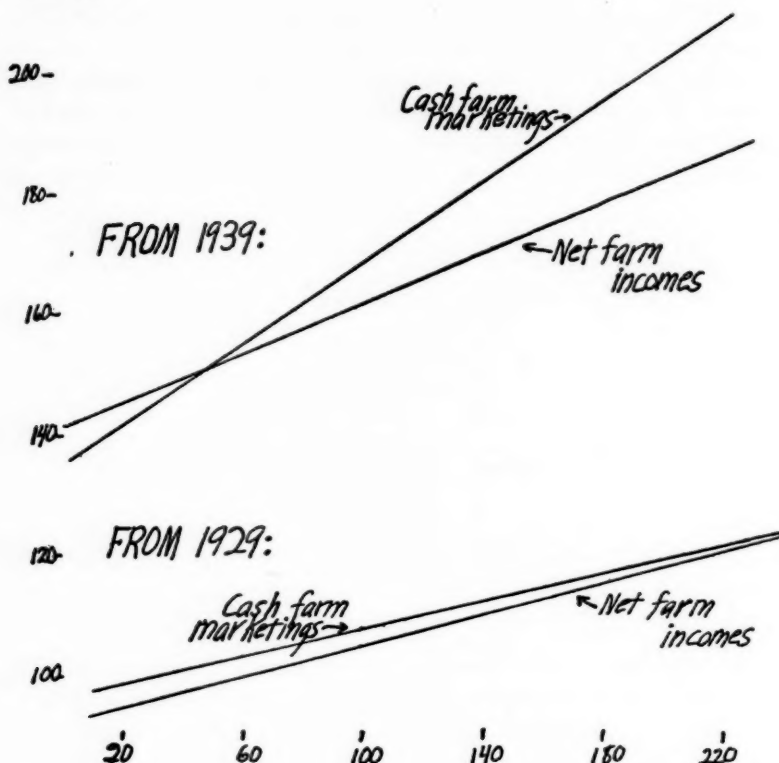


FIG. 2. RATE OF INCREASE OF FARM WAGES WITH CASH FARM MARKETINGS AND WITH NET FARM INCOME, 1929 TO 1942, AND 1939 TO 1942.

Although the analysis in terms of net farm income is not extended beyond 1942, there is nothing in Table 1, or in other facts presented, to indicate that the lag of farm wages behind net farm incomes would not be as large in 1943 as in 1942, and the same for April 1944. Farm expenses other than labor costs have been held down rather effectively by the OPA controls.

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REVIEWS

Food, Frank A. Pearson and Don Paarlberg, New York: Alfred A. Knopf, 1944. Pp. xi, 239. \$2.75.

Food plays a leading part in war, consequently, it is natural for a period such as this to produce a variety of books dealing with that subject. Readers of this volume are put on their guard in what to expect by the prefatory remark of the authors portraying themselves as "the Devil's advocate" but making clear that in that role they are defending what they elect to call their own "heresy."

While the discussion ranges over a rather wide terrain, attention is centered mainly on price control as it affects food, with some emphasis on the need for shifting diets to greater reliance on crops. The attitude of the authors towards control of food prices, at least as it applies to the farmer, is reminiscent of that of the minister towards sin in the favorite Coolidge story. They apparently are against it.

It is said that "The food program has been subservient to the inflation program whereas the inflation program should be subservient to the food program" (page 10). It is added that "The keynote of our food strategy has been the maintenance of low prices for food." At another point the comment is made that "OPA tried to hold down prices, and thereby farm income" (page 67). However, no real analysis of the major aims in inflation control or of the consequences to farmers of a runaway inflation is included. The implication seems to be that food prices could have been permitted to rise without any serious repercussions from other segments of the economy. No attention is given to the "Little Steel" formula. Perhaps, the authors question that this formula merits acceptance. If so, they might need to be reminded of the fact that others have reservations concerning the merits of the restrictions that fix limits below which price ceilings on farm products cannot be set. Both labor and agriculture have insisted on what they claim to be their "rights." Under the circumstances, is it realistic to assume that wage controls would have been maintained if food prices had been permitted to rise? What would have been the inflationary consequences? This issue does not receive adequate treatment.

Considerable faith in price as a guide to consumption, even under abnormal conditions of war, is evidenced. If this is acceptable, why not let prices be the directing force generally? But one may wonder

what price levels would have been needed on war supplies under such a system to shift production from civilian lines.

Some of the observations with respect to food supply appear rather extreme. The chapter on "Food Shortage" opens up with the broadside that "Like Old Mother Hubbard, Uncle Sam has gone to the cupboard and for the first time in twenty-five years has found it bare." This, however, is toned down later by the comment that "Agitation about the food supply has been inspired by the tongue and not the stomach" (page 12). If this should be a long war and were the United States actually faced with the prospect of feeding the world for an extended period, decided shifts in the American diet would be forced. Present prospects do not seem to warrant extreme changes.

This book is likely to be more useful to objectors to the food and price programs who may be seeking "quotes" to support their contentions than to serious students looking for dispassionate analysis to help shed light on some of the knotty problems of the day.

O. B. JESNESS

University of Minnesota

Where's the Money Coming From, Problems of Post-war Finance, Stuart Chase. New York: The Twentieth Century Fund, 1943. 179 pp. \$1.00.

Prices in a War Economy, Some Aspects of the Present Price Structure of the United States, Frederick C. Mills. New York: National Bureau of Economic Research, Occasional Paper 12, October 1943. 102 pp. \$.50.

Present Savings and Post-war Markets, Sumner H. Slichter. New York and London: McGraw-Hill Book Company, Inc., 1943. 73 pp. \$1.00.

The brevity of these three publications is the principal reason for their being reviewed together.

Mr. Chase's book is the third of a series, under the general title of "When the War Ends," written for the Twentieth Century Fund. In the foreword, the Executive Director of the Fund writes that "this series is designed to provoke thought and stimulate discussion." (p. viii) "Where's the Money Coming From" should succeed in this purpose. When it comes to putting complicated economic

issues in popular terms and making these issues alive, Mr. Chase has few equals.

He pleads that we be the master of money, not the slave. He says: "I repeat once and I repeat again, like Mr. Coué: 'What is physically possible is financially possible'." (p. 26) He views the financial aspect of full employment as essentially a problem of closing the savings-investment gap. "Somewhere between the extremes of a 100 per cent consumption economy, and an economy which saves too much, the balance must lie. What we want is a community in which savings flow into investment channels in a steady enough stream and in sufficient volume to employ all our people and to keep the dollar circuit closed." (p. 36) He does not, however, pursue the details of the problem very far.

Fundamentally, he favors a compensatory economy "where businessmen largely own and operate the means of production, but where the government underwrites full employment by its control of existing financial machinery." (p. 129)

Just how this compensatory economy can be made to work is not altogether clear. It may be said, however, that Mr. Chase is not a doctrinaire pump-primer and is anxious to avoid an excessive national debt. The two main planks in the underwriting of full employment are a public investment program and a social welfare program. The public investment program emphasizes local projects with federal support rather than direct federal construction; while the social welfare program extends over the whole field of social security, housing, health and education.

The first program appears to be the means by which investment outlets appropriate to the volume of savings may be maintained, and the second program the means for maintaining and adequate flow of consumer buying, as well as for fulfilling the general demand of the public for security. Along with these two pillars of the compensatory economy, he favors a wide area of free competition. He also speculates a bit on the use of velocity stimulators in the form of taxes on unspent funds; is willing to resort to heavy deficit financing if the economy gets in a jam; and seems somewhat inclined to experiment with non-interest-bearing revolving funds which do not increase the debt. The ideas presented by Mr. Chase are familiar to most economists, and it would be an easy matter to pick technical flaws. As a basis for public discussion of financial problems in the post-war period, however, the book deserves to be widely read.

The excellent pamphlet by Professor Mills is essentially a presentation of a series of statistical measures of economic changes which have taken place in the United States since 1939. He first compares output, prices and productivity in 1939 with the period 1912-14; then changes in production and prices from 1939 to 1943, with special attention to rates of price change at different stages of production and distribution. The incidence of inflation is measured by comparisons of changes in output and changes in value of product, and of changes in employment and changes in aggregate wage payments.

Price relations are further analyzed by examining the status of farmers, other primary producers, wage earners, manufacturing industries, and consumers. Comparisons are made with prices in 1912-14 as well as prices in 1939. Measures of changes in real income, real purchasing power, and profits are also presented.

Mills makes very few statements with respect to causes of the changes measured or the economic implications of those changes. However, he does conclude that "the maintenance of today's cost, price, and wage relations would present grave difficulties in the face of a substantial decline in output. How such a decline is to be avoided in the transition from war to peace is perhaps the major economic problem we shall face at the end of the war" (p. 65). Agricultural economists will be interested in the statement that "the marked improvement in the farmer's terms of exchange since 1939 has been, in the main, a corrective of relatively unfavorable terms existing in 1939" (p. 46).

The appendix includes a valuable table containing monthly indexes of wholesale prices from 1927 to 1943, according to the commodity classifications of the National Bureau of Economic Research. These series extend those originally published in "Economic Tendencies in the United States" (1932).

The object of Professor Slichter's study is to appraise the significance of the tremendous wartime accumulation of liquid assets. His method is to construct a model of the economy by years from 1942 to 1946, in terms of employment, income, expenditures and savings. This model is worked out under alternatives of "perfect," "good," and "fair" price control. The general time sequence assumes that the German phase of the war ends late in 1944 and the Japanese phase one or two years later. The bulk of the study is concerned with the construction of the model, with considerable

attention being given to dividing savings into "hot," "warm," and "cold," a classification resting on the likelihood of their being spent. The development of the model is a careful and competent job, although it makes laborious reading.

The interest of most readers is likely to center on Slichter's 21 conclusions, some of which are implied in his statistical estimates, and some of which relate to wider problems of the post-war period. Their general tone is optimistic. The accumulated savings form a cushion during the transition period and the basis for a sustained period of post-war prosperity, provided businessmen will plan production on a sufficiently large scale. Slichter sees some inflationary danger in the savings situation, but thinks that it is less dangerous than many persons have feared. In this connection, he comes to the conclusion that there is sufficient danger of inflation so that "good" or "fair" control of prices and wages in the war period is to be preferred to perfect control of these factors. An obvious alternative would be to continue direct controls over inflation in the transition period rather than to decrease inflationary pressure in that period by permitting a creeping inflation in the war period.

J. P. CAVIN

Washington, D. C.

Population Problems, A Cultural Interpretation, Paul H. Landis.
New York: American Book Company, 1943. Pp. xii+500. \$3.75.

The orientation of this textbook is indicated by its subtitle, *A Cultural Interpretation*. The 25 chapters—each followed by questions and a list of selected references—are grouped in five parts. The first one, of 50 pages, discusses population as a field of sociological study, outlines population growth in the world and the United States, and concludes with a 20 page review of population theories. The second part, with as much space as any three of the others combined, has to do with cultural forces in vital processes—reproductive behavior in general, differential fertility, death rates and length of life. The third part includes a chapter each on sex, age and ethnic distribution in the United States. The fourth considers the distribution of population in the United States by functional role, rural-urban residence and by geographic region. The fifth and last part is an examination of international and internal migration, with a concluding statement on a population policy for the United States. There is an index of names and

one of subjects. Coverage of contemporary population literature is comprehensive, as shown by the frequent references to Dublin, Kiser, Lorimer, Lotka, Myrdal, Osborn, Thompson, Kuczynski, Gini, Willcox, Vance, Baker, Notestein, and their numerous fellow workers. Tables and charts are plentiful and are in good taste, both statistically and pedagogically.

Adopting a definition of the social world as that of human beings; and of the cultural world as that of man-made objects, Landis argues that these two spheres, rather than biological, geographical or naturalistic factors, determine trends in population numbers. In this frame of reference, fecundity receives only passing mention but fertility is a major category of study. The premise that population growth is determined by variations in the supply of economic goods is also discarded as unduly monistic. The impossibility of stating universal laws of population growth is asserted, and generalization is restricted in both space and time by specified sociocultural limits. Population facts about the continents and several nations are presented in many of the chapters, but data for the United States are predominant throughout the book.

In the concluding chapter regulations of immigration are cited as "practically the only attempt" at population policy in the United States but reference also to public health programs might not have been inappropriate here. The coming of "a greater awareness of population problems" and the "development of a comprehensive population policy" is predicted. Insofar as such a policy would attempt to "halt the downward trend of the birthrate," Landis observes that, "The plan will probably be to create a condition in which children in families can be happy and well provided for; to stress family and child as a means of personal happiness; to modify those conditions of an urban-industrial culture which hinder people from having children."

This foretells a larger influence of the Swedish programs than of those in Germany, Italy, France, or other nations upon population policy in the United States. One small evidence of the importance Landis attaches to Swedish population thought is the quotation once in the preface (p.v) and again in the last chapter (p. 459) of Myrdal's warning that political democracy must solve the population problem or perish.

HOWARD W. BEERS

University of Kentucky

Farm People and the Land After the War, Planning Pamphlet No. 28, Murray R. Benedict, Washington, National Planning Association, November 1943. Pp. 26. \$0.25.

This pamphlet contains an ably distilled consideration of the structure of the farming economy. A reasoned prediction that "the early readjustment period may not be marked by heavy surpluses of labor in farming areas" is followed by a seven paragraph review of the "basic shift from agriculture to industry and its effect on size of the farm population." Reproduction rates, a growing sense of insecurity, one-crop (cotton) agriculture, wage-labor situations, cropping of marginal lands, ill-adapted farm units and exhaustion of resources underlie the maladjustments of structure in the agricultural industry. Conditions of future improvement include: efficient farm size; a farm population no larger than that of 1940 (hence, continued rural-urban migration); tenure adjustments like those set out in the English Agricultural Holdings Act, but modified to meet U. S. needs; a five-fold program for the cotton country; public ownership of much forest land, some grazing land, land with "excessive risk of crop failure" and land for recreational use; the provision of continuous employment to wage hands by dove-tailing jobs, and diversifying crops; procedures for collective bargaining between wage hands and employers; and conservation measures shared by farmers and the government.

The argument is clear, constructive, well-grounded in fact, and well-balanced in point of view.

HOWARD W. BEERS

University of Kentucky

Financing Inventory On Field Warehouse Receipts, Neil H. Jacoby and Raymond J. Saulnier. New York: National Bureau of Economic Research, Inc. 1944. pp. xv, 89, \$1.50.

The development, procedure, and experiences in field warehousing are comprehensively reviewed in this treatise.

A sharp controversy arose early in the history of field warehousing between the Administrator of the United States Warehouse Act and the field warehousemen over the practice of employing a person formerly employed by the depositor as custodian and also, in some instances, permitting the custodian to remain on the payroll of, and to perform duties assigned by, the depositor. The Administrator has refused to license warehouses following these practices under

the United States Warehouse Act, thus preventing them from issuing Federal warehouse receipts.

In view of this controversy, the treatise under review is especially significant. The authors summarize it by stating: "Whatever merits these opposing contentions may have, it remains true that Federal and state courts have upheld the validity of warehouse receipts issued by warehousemen utilizing former employees of the depositor as custodians, provided that the bailments were effective in all respects as a result of good warehouse management."

The foregoing conclusion would have been materially strengthened had the authors cited and reviewed the court decisions in point.

The authors point out several advantages of field warehousing, of which the two principal ones are cost and convenience. They also summarize the credit elements which are considered when field warehousing is employed. These are: "(1) *the field warehouse company*—its financial responsibility, experience, the form of its warehouse receipts, and the amount, coverage and worth of its bond; (2) *the field warehouse*—the validity of the lease agreement, the adequacy of the physical conditions, and the competence and integrity of the custodian; (3) *the borrowing business concern*—the moral and financial responsibility of its principals, its financial strength, the calibre of its management, its past and prospective earning power; (4) *the warehoused merchandise*—its value, susceptibility to deterioration, breadth of market and price fluctuation."

Where the foregoing factors have been carefully analyzed and appraised, the authors report that losses have been few. The institution with which the reviewer is connected has experienced no losses on field warehouse receipts in ten years.

E. A. STOKDYK

Berkeley Bank for Cooperatives

Intergovernmental Commodity Control Agreements. Montreal: International Labour Office, 1943. 280 pp. \$3.00.

This publication is primarily a source book. The main body of the study presents the texts of the various important intergovernmental commodity agreements of recent years, including those relating to wheat, sugar, tea, coffee, tin, beef, rubber, and cotton. A series of appendices contains extracts from the reports and resolutions concerning commodity control adopted by international conferences

and committees. These range from selected passages from the report of the World Economic Conference of 1927 to recent statements of the Combined Raw Materials Board, the United Nations Relief and Rehabilitation Administration, and other wartime agencies. These purely factual and descriptive parts of the book are preceded by an introduction which gives in summary form the historical and analytical background necessary to a proper understanding of recent intergovernmental measures and official statements of policy with respect to commodity arrangements. This introductory statement sketches briefly the development of intergovernmental commodity control schemes, existing statements of policy, principles which should guide the development of new controls, institutional arrangements, accessory functions of control authorities, and legal and financial questions. This section is well documented and the footnotes provide excellent references for those who may wish to read extensively in the field.

Economists in general deplore the economic and political anarchy which characterized world trade during the interwar period, especially in the 1930's. They agree that economic progress, and to some extent world peace, are dependent upon the devising of an international order which will provide for a general expansion in production and consumption. This means the reorientation of production from surplus to deficit commodities, shifting production from high cost to low cost areas, higher incomes and increased consumption, a regard for the interest of consumers as well as producers, and protection of the rights of both capital and labor. But there is wide divergence of opinion as to how these objectives may be achieved. Some tend to look backward toward free trade and its philosophy of the natural tendency of an unfettered economic system toward expansion. A growing body of students, however, is inclined to feel that if expansion is to be achieved it must be planned expansion. That is, they believe that there is no longer any real question as to whether there shall be deliberate interference with economic processes by the State. Events have already decided that question. The battle which is to be fought is over whether the State shall intervene on behalf of the national and the international community as a whole or on behalf of particular interests.

To those interested in these supremely important considerations, this book will be of real value.

BENNETT S. WHITE, JR.

Bureau of Agricultural Economics

Putting Dairying on a War Footing, O. H. Brownlee. Ames: Iowa State College Press. (Original, March 1943. Revised edition, May 1944). Pp. 64.

In March 1943 the Iowa State College Press published Number 5 of a series of bulletins on Wartime Farm and Food Policy, entitled "*Putting Dairying on a War Footing*" and authored by O. H. Brownlee, Research Associate in Economics. The bulletins in this series were not official publications of the Experiment Station, but were issued with the approval of a committee consisting of Albert G. Hart, Margaret G. Reid, Theodore W. Schultz, and Walter W. Wilcox.

Shortly after this bulletin appeared, protests were received by Iowa State College from certain dairy and farm groups. The protests appear to have been of two sorts: those that claimed certain statements in the bulletin were ambiguous, inadequately documented, if not actually incorrect; and those that criticized because some topics were amplified beyond the proper scope of the bulletin. Among the latter topics were such things as the discussion of sanitary regulations as trade barriers, the efficacy of taxation as a means of preventing misbranding and fraud, and the competitive relationships of oleomargarine and butter. It was urged that the particular discussion of these matters was a disservice to the dairy industry.

Under date of July 28, 1943 President Friley of Iowa State College circulated a letter containing a report from a Joint Committee of 12 representing the dairy industry of Iowa and members of the staff of Iowa State College, appointed to review the bulletin in question. In the letter President Friley announced that there would be a revision "in the form of a new study of the dairy situation, undertaken co-operatively, and including both wartime problems and those likely to be of interest and concern in the post-war period."

Academic people and, one may suspect, the dairy interests have awaited with interest the revision. It finally appeared in May 1944 under the official sponsorship of the Experiment Station. Director Buchanan's Foreword to the revision espouses the proposition that an all-Experiment Station editorial committee is a safer and, perhaps, wiser board of review for such a bulletin than one composed entirely of economists. Perhaps he is right, but it might be pertinent to inquire how far such inclusiveness need be carried; should Ex-

periment Station editorial committees include engineers, doctors, psychologists, and whom else? But this is not, perhaps, a major point in the revision, although it was considered important enough to mention in the Foreword.

The revised edition of Bulletin Number 5 is re-arranged. It contains some 1943 data and 1944 estimates that were not available when the original was written. It has a chapter on "Some Postwar Implications of Wartime Developments in the Dairy Industry." The relative emphasis given to some of the points under discussion is modified. There are many more footnotes to source material and an appendix with 10 basic tables is included. On the whole, however, the author and the original editorial committee are to be congratulated on the small amount of basic change which was considered necessary in the general analysis and conclusions after a year's time and rigid scrutiny.

To the present reviewer there does appear, however, to be one rather fundamental difference between the two bulletins. The original was, to a considerable extent, a treatise on public policy, with definite conclusions as to "what should be done." The revision is more nearly confined to an objective treatment of inter-related facts, let whomsoever will decide what results are wanted. Probably the latter is the more "scientific" presentation; perhaps it generally is the "better" one for experiment stations and other academic institutions to follow, for such institutions are not expected to be directly concerned with policy formation. Nevertheless, results of investigations need to be spelled out so clearly that the policy makers can be held responsible for their decisions. In this regard the revision is quite satisfactory.

Most of the conclusions in the bulletin (original or revised) long have been recognized by many students of dairying and nutritional problems. While the present writer was a member of the Food Requirements Committee of W. P. B. in 1942, the situation was analyzed in much the same terms. The desirability of holding milk production somewhere between 110 and 125 billion pounds and as near the top of that range as practicable has been accepted generally. The possibilities connected with better utilization of milk for human food, through increasing the proportion of dried skim milk and decreasing the proportion fed to livestock has been urged from beginning of the war emergency, but the problems of transportation of whole milk from the farm, and those of proper location of

driers have not been easily solved. And in general there has been agreement that "reduction in butter supplies will have few adverse effects upon human health, if there are no other changes in consumption" (p. 36), and that "when fortified margarine is used in place of butter in a mixed diet, no nutritional differences can be observed" (p. 39).

The revised bulletin is almost as explicit in opposing legalistic barrier against the sale of alternatives as was the original. The opposition is voiced, however, in such terms as "some of these barriers have the effect of keeping oleomargarine off the market . . .," "some of these restrictions increase the prices which consumers have to pay for oleomargarine . . .," "taxes and similar devices, however, are not the sole nor the best means for enforcing identification" (pp. 40-41).

It is to be hoped that this thoroughly sane, well balanced, temperate (especially in revision) statement of a complex subject (and one full of personal prejudice and self interest) will be widely read. It was impossible because of lack of space to spell out all the difficulties surrounding each of the recommendations, but governmental agencies and the industry itself are making progress with some of them. The present writer believes, however, that the basic problems connected with the efficacy of use of a larger proportion of milk as human food, and with the efficiency of milk distribution have not been grasped with as firm a hand as the general interests of wartime America, as distinguished from the special interests of the dairy industries, warrant.

ROLAND S. VAILE

University of Minnesota

Tea Under International Regulation, V. D. Wickizer, Food Research Institute, Stanford University, California, 1944. Pp. vi+198. \$2.50.

Whether we like it or not, the trend in international trade in basic agricultural products seems to be away from free competition and toward centralized control. If this trend continues in the post-war world, the adventures in commodity regulation during the inter-war period will be particularly instructive.

Of the control schemes of the past twenty years, that for tea has been one of the most successful from the point of view of the producer, and at the same time there seems to have been comparatively

little injury to the ultimate consumer. Since the signing of the agreement in April 1933, prices of tea in London have been consistently higher than during the early depression years, but definitely lower than the average of the nineteen twenties. The profits of the tea plantations in India and Ceylon in recent years have averaged from 10 to 12.5 percent, but there has apparently been no attempt on the part of the Tea Committee to recapture by restrictive measures the profits of 40 to 50 percent which were common in pre-depression years.

The Tea Agreement is in form a contract between representatives of the tea industry in India, Ceylon and the Netherlands Indies, but with the active support of the Indian Government and the British and Dutch colonial administrations, which enforce export quotas and otherwise assist in the administration of the Agreement. Quotas are determined from time to time by the International Tea Committee, sitting in London.

Conditions in the tea industry are at present highly favorable to the success of a commodity agreement. Production for export is highly concentrated with about 80 percent of all exports originating in the participating countries. The effective concentration was even greater, for in pre-war years China, Japan and Formosa were in the main exporters of green tea, which is not acceptable to most consumers of black tea. Another favorable condition is that the volume of production is readily controlled by finer plucking which results in tea of higher quality or coarse plucking which increases volume at the expense of quality. Markets, also, are highly concentrated, with 50 percent of all imports entering the United Kingdom.

While the Tea Committee has used restraint in the exercise of its monopoly power, it has undoubtedly restricted competition in the industry. Weak and presumably inefficient producing companies which were "in the red" in the early depression years, have been saved and now pay dividends. There is probably little encouragement for the establishment in the agreement countries of new plantations which could export under the quotas only by reducing the shares of plantations already in production.

In this book Mr. Wickizer gives us first some of the essential facts in regard to the tea industry, then the background of the agreement, an appraisal of the agreement itself, a discussion of the potentialities and prospects, and finally an excellent documentary and statistical appendix. The material is well organized and presented in an interesting and effective style.

In the final chapter the author takes up the problem of consumer representation and suggests the possibility of transforming the agreement into an intergovernment arrangement. He makes no recommendations on these points, but it would appear from the facts presented that the tea industry offers an excellent opportunity for a constructive agreement between governments of producing and consuming countries. The restoration of free competition in the industry seems very unlikely. An international agreement that will give stability without undue restriction may be the answer.

G. B. L. ARNER

Washington, D. C.

Roots in the Earth. P. Alston Waring and Walter M. Teller. New York: Harper and Brothers, 1943. 202 pp. \$2.50.

In "Roots in the Earth" two Bucks County, Pennsylvania, farmers ably present what they believe to be wrong with agriculture and what they think ought to be done about it. These farmers, one an experienced writer and the other a former employee of the Farm Security Administration, for the past several years have each operated a family-sized commercial farm. They enjoy farming as a way of life and as an occupation and sincerely desire that more farm people shall achieve similar enjoyment.

The theme of the book is the social and economic conflict which the authors believe exists between the large and the small farm. They hold no brief for subsistence farming, but they deplore what they think is the tendency in agriculture away from family-sized commercial farms toward what they call large farms.

The reader may frequently be confused as to just what the authors mean by a large farm. No attempt has been made by the authors to support their ideas with statistical evidence. Some readers who are thoroughly acquainted with agricultural conditions will feel that perhaps in this large farmer-small farmer controversy a straw man has been constructed so that the authors may tear it apart and thereby unburden themselves concerning many controversial agricultural issues.

"Roots in the Earth" is a sincere, though at times too emotional, expression of sympathy toward those farmers who for various reasons have been unable to adjust to the tendency of capitalistic enterprise to concentrate in larger units in the interests of efficiency. The authors in stating their opinion as to what the government and farmers ought to do to prevent this tendency frequently appear to

overlook the fact that agriculture is only a part of a huge and complex economy and therefore is subject to the same economic forces as the total economy.

Some solutions apparently favored by them are: (1) easy credit through the Federal Farm Security Administration, (2) electric service co-operatives through the Rural Electrification Administration, (3) expansion of soil conservation practices through the Soil Conservation Service, and (4) erection of a system of government warehouses for the storage of farm products in the metropolitan markets.

Fortunately, Mr. Waring and Mr. Teller do not advocate that the government shoulder the entire responsibility for making farming a remunerative and soul-satisfying occupation for all. To small farmers the authors advise modernization of production methods; fuller utilization of marketing, purchasing, and other co-operatives; more advantageous use of existing facilities for self-education; greater home use of farm products; and a broader conception of their role as citizens. They stoutly contend that operators of family-sized commercial farms by these methods can be as efficient as, and more contented than, the "big business" farmer.

Those readers who know agriculture and agricultural people will find "Roots in the Earth" stimulating. According to their varying economic, social, and political philosophies readers frequently will be annoyed by what appear to be unqualified half-truths. Specifically, some of the criticisms aimed at existing farmers' co-operatives and other organizations will be challenged by those acquainted with the facts. Urban readers may easily be misled unless they recognize those instances in which the authors' political philosophies and emotions prevent a fair presentation of agriculture's condition and needs.

Because "Roots in the Earth" deals with so many controversial issues which undoubtedly will assume renewed vigor after the war, it deserves thoughtful reading by all who are to play a part in deciding what the future shall be.

W. E. KEEPPER

Pennsylvania State College

NEWS ITEMS

The Universidad Interamericana of Panama City, Republic of Panama, has announced the publication of Volume 1, Number 1, of a new Journal, entitled, *Bulletin of the Institute of Social and Economic Research*. The first issue, which appeared this year as a quarterly, includes a wide range of subjects in the field of Sociology and Economics. The Journal is a medium through which the results of studies on economic and social problems of the Americas, sponsored by the Institute of Social and Economic Research, are made available. Dr. Richard F. Behrendt, Aparlado, Panama, Republica de Panama, is Director of the Institute.

To establish a more direct line of authority, a regrouping of existing organizations within the Office of Distribution, War Food Administration, was made in March. All programs and functions of OD were assigned to four deputy directors. The assignments of these four deputy directors are now as follows:

C. W. Kitchen, Deputy Director for Commodity and Industry Regulation

Lt. Col. Ralph W. Olmstead, Deputy Director for Supply

S. R. Smith, Deputy Director for Civilian Programs

Frank A. March, Deputy Director for Management

Included in the regrouping of responsibility is a centralization of the WFA's food procurement and disposition functions. Under this arrangement, the newly created Procurement and Price Support Branch under the Deputy Director for Supply will be responsible for all food purchasing and disposition of commodities for the Office of Distribution.

R. W. Bartlett, Professor of Agricultural Economics at the University of Illinois, is on leave for a year working with the Bartlett Foundation Inc., a research agency set up to work on dairy marketing problems and financed by merchandising interests. He is being assisted by Mr. Anthony Mathis, former Research Assistant in Agricultural Economics.

M. K. Bennett, Economist, Food Research Institute, Stanford University was on leave during April-August serving as chief of the Division of Food Allocations, Office of Food Programs, Foreign Economic Administration.

Herbert A. Berg, Project Leader in Farm Management Extension at the Michigan State College since 1928 has been appointed to the position of Assistant Director of the Agricultural Extension Service at Michigan State.

Mr. Luther L. Bohanan of the Regional Land Tenure Research Project at Fayetteville, Arkansas, has accepted a position as Assistant Agricultural Economist in the Department of Agricultural Economics and Farm Management, University of Maryland.

Karl Brandt, Economist, Food Research Institute, Stanford University, spent a month in May-June in Iowa as visiting professor in the Department of Economics and Sociology, Iowa State College, Ames. Since April 1944, Dr. Brandt has been serving the Office of Distribution, War Food Administration, as a consultant.

Maurice L. Brenner was recently designated as chief of the newly created Procurement and Price Support Branch in the War Food Administration.

Capt. O. B. Brown, U.S.M.C., ret., has been appointed assistant in the Department of Agricultural Economics in the University of Illinois.

Dr. E. L. Butz returned to his staff position at Purdue University on July 1 after spending several months at the Brookings Institution. The study of the Production Credit system on which he was engaged has been completed and will be published shortly in the Brookings Institution series.

H. S. Cannell, formerly Assistant Agricultural Economist, Division of Marketing and Transportation Research, has transferred to the Institutional Users Rationing Branch, Office of Price Administration, as Business Economist.

G. Alvin Carpenter, of Utah State Agricultural College, has been transferred from Extension Economist to State Supervisor, Emergency Farm Labor.

H. C. M. Case, Head, Department of Agricultural Economics, University of Illinois, is doing consultation work on a temporary basis with the UNRRA., Washington, D. C.

J. Rudolph Ferrell, Agricultural Economist has recently been reassigned to work in the Division of Farm Management and Costs, Appalachian Regional Office, at Washington, D. C.

Clarence A. Fiske has joined the Division of Farm Management and Costs at the Regional headquarters in Lincoln, Nebraska. Previous to this assignment he had been working in the Farm Credit Administration in North Dakota.

W. O. Fraser ended nearly 20 years of service with the U. S. Department of Agriculture in June when he accepted a position with Wilson and Company, meat packers of Chicago. Mr. Fraser had served the Department as Assistant Chief of the Livestock and Meats Branch of the Office of Distribution, War Food Administration, since November 1942, and as Vice Chairman of the War Meat Board since its establishment in June 1940. Prior to that he had been connected in administrative capacities with the market news or meat grading services, or both, in Boston, Chicago, and Des Moines. He was also with the Agricultural Adjustment Administration in an administrative capacity from 1934 until April 1937.

Dr. Norman Leon Gold resigned in June as Chief of the Civilian Food Requirements Branch of the Office of Distribution to join the staff of the

United Nations Relief and Rehabilitation Administration. Prior to becoming Chief of the Civilian Food Requirements Branch, Dr. Gold was assistant to the Director of Food Distribution. He was first affiliated with the U. S. Department of Agriculture in 1934. He served as Chief of the Economic Analysis Section of the former Federal Surplus Commodities Corporation, and Assistant Chief of the Distribution Division of the former Surplus Marketing Administration. He was named assistant to the Administrator of the Agricultural Marketing Administration in 1942.

Austin G. Goth, formerly at West Virginia University, has accepted appointment as Agricultural Economist on the staff of the Division of Farm Management and Costs with headquarters at Lincoln, Nebraska.

Dr. W. T. Ham, Division of Farm Population and Rural Welfare of the Bureau of Agricultural Economics, has been detailed to the Office of Labor, War Food Administration where he will have charge of their program concerning farm wage stabilization.

Peter L. Hansen, Agricultural Economist, is now working on Interregional Competition in the Division of Farm Management and Costs at Washington, D. C.

Tyler F. Haygood, formerly with the Economic Research Division of the Forest Service, U. S. Department of Agriculture, recently joined the Division of Agricultural Finance in the Bureau of Agricultural Economics as Senior Agricultural Economist to work on problems of farm taxation.

Louis F. Herrmann, formerly Senior Agricultural Economist, in charge of dairy price analysis has left the Bureau of Agricultural Economics to accept a position with the National Cooperative Milk Producers Federation.

Raymond B. Hile is now an Agricultural Statistician with the Division of Agricultural Statistics, at Lincoln, Nebraska.

Robert L. Hunt has accepted appointment as Agricultural Economist in the Division of Farm Management and Costs, and is stationed at College Station, Texas.

William H. Jasspon, director of the Oilseeds Division of the Commodity Credit Corporation, in April was assigned the additional duties of chief of the Fats and Oils Branch of the Office of Distribution thus bringing all the fats and oils functions of WFA under a single administrator.

Martin B. Johnson, Agricultural Economist, has joined the staff of the regional office, Division of Farm Management and Costs, at Lincoln, Nebraska.

Dr. Stewart Johnson, Extension Specialist in Milk Marketing, Cornell University, has been retained by BAE as consultant on an analysis of the marketing margins for milk and dairy products, a part of the overall study of marketing margins for farm products in progress in the Division of Marketing and Transportation Research.

P. E. Johnston, Professor of Agricultural Economics, University of Illinois, is State Supervisor of Emergency Farm Labor for the State of Illinois.

Lawrence A. Jones, formerly of the research staff of the Farm Credit Administration at Springfield, Massachusetts, has joined the Division of Agricultural Finance of the Bureau of Agricultural Economics to assist in the research work on short-term credit.

R. A. Kelly has been appointed as Associate in Fruit and Vegetable Marketing, University of Illinois, to take over the duties of Professor J. W. Lloyd who has retired.

E. W. Lamborn, who has been Assistant in Agricultural Economics at the University of Illinois during the past year has resigned to accept a position at Cornell University.

John L. McCollum was recently made chief of the Cotton and Fiber Branch's Southwest regional office at Dallas, Texas. Mr. McCollum has been with the U. S. Department of Agriculture since 1928. For 10 years of this time he was in the Washington office of the Cotton and Fiber Branch; for the other six years he served with the field offices of the Branch at Memphis, Atlanta, and Dallas.

J. F. Miles, formerly Assistant Economist, with Program Appraisal Branch of the Office of Distribution, War Food Administration, Regional Office, Atlanta, Georgia, is now Associate Economist, Economics Section, Extension Service, Washington, D. C.

S. R. Newell was named Assistant Chief of the Livestock and Meats Branch to succeed W. O. Fraser who resigned to take a position with the industry. Mr. Newell has been with the U. S. Department of Agriculture for the last 18 years, during which time he has been associated with various crop and livestock marketing programs, and with market service and regulatory work. He left the position of deputy director of the Office of Distribution to take over his new assignment.

B. D. Parrish, former Associate in Agricultural Economics, University of Illinois, has accepted a position with Washington State College, Pullman, Washington.

Dr. R. E. Patzig, formerly Director of Research of the Dairy Products Marketing Association, is now Chief of the Midwest Field Office of the Program Appraisal Branch, War Food Administration, in Chicago.

The professional staff also includes Messrs. Paul Mehl and H. S. Irwin, formerly with the Commodity Exchange Administration, Dr. T. J. Nylander, of the University of California, and Dr. Gideon Hadary, formerly with the National Dairy Council.

Arthur G. Peterson, Senior Agricultural Economist in the Division of Statistical and Historical Research of the Bureau of Agricultural Economics, and who has been working in the field of price index numbers and farm

price collection, will shortly take the position of Assistant Director of Research in the field of agriculture, Army Industrial College, War Department.

Everett E. Peterson has rejoined the Division of Farm Management and Costs of the Bureau of Agricultural Economics as Agricultural Economist and is stationed at Montana State College, Bozeman, Montana.

Woodrow W. Rufener, formerly Agricultural Economist working on fruit and vegetable price analysis, left the Division of Statistical and Historical Research of the Bureau of Agricultural Economics in May to take a position with the Washburn-Wilson Seed Company in Moscow, Idaho.

Mont H. Saunderson, who was granted leave from the United States Forest Service to act as Range Economist for the Montana Agricultural Experiment Station and Montana State College last September, is resigning his position July 1 from Montana State College to return to the Forest Service. Mr. Saunderson will serve as Range Economist for the Forest Service and have his headquarters in Denver, Colorado.

F. A. Stewart, on leave from Berea College, Kentucky, has been appointed Assistant Chief in Farm Management in the Department of Agricultural Economics, University of Illinois, to supervise farm records on farms in southern Illinois.

Dr. Emil S. Troelston of the University of Missouri has accepted a position as Associate Agricultural Economist in the Department of Agricultural Economics and Farm Management, University of Maryland.

Melvin Carl Warner, a recent graduate of the University of California, has been appointed an Assistant in Farm Management, Department of Agricultural Economics, University of Illinois.

Harry A. White, Assistant Agricultural Economist, who received his master's degree in 1944 from North Carolina State College, has accepted a position with the Bureau of Agricultural Economics and will be located at the Georgia Experiment Station, Griffin, Georgia.

HONOR ROLL

Agricultural Economists in the Armed Services of the United States*

Dibble, James C.	Farm Credit Administration	Navy
Jennewein, Everett M.	South Dakota State College	Navy
Kriesel, Herbert C.	Bureau of Agricultural Economics	Navy
Lane, Charles N.	Farm Credit Administration	Navy
O'Leary, Winfield	Mississippi State College	Navy
Price, Wilfred H.	Kansas State College	Navy
Schruben, Luke M.	Extension Service, U.S.D.A.	Navy
Shelley, Oren R.	Farm Credit Administration	Navy
Umstott, Haven D.	Bureau of Agricultural Economics	Army
White, Bennett S., Jr.	Bureau of Agricultural Economics	Navy

* Only Agricultural Economists reported to the Editor as having joined the armed services since the publication of the May 1944 issue of the JOURNAL are included in the list.